

52457
GREATER TORONTO AREA

3Rs ANALYSIS

SERVICE TECHNICAL

APPENDIX - SCHEDULES

VOLUME II

FINAL - MAY 1994



Ministry of Environment and Energy

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GREATER TORONTO AREA 3Rs ANALYSIS
SERVICE TECHNICAL APPENDIX - SCHEDULES

Prepared by Resource Integration Systems Ltd.
for
Fiscal Planning and Information Management Branch
Ministry of Environment and Energy

FINAL - MAY 1994



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RESIDENTIAL NET EFFECTS TABLES

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RESIDENTIAL EXISTING SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Residential Existing
CRITERIA GROUP: Service
CRITERIA: Reliability
INDICATOR: Proven Technologies based on Experience in Other Jurisdictions

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors. • Self haul of waste to landfills and transfer stations by residents. • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • landfill bans proven technology for encouraging diversion but some banned materials still disposed with garbage 	<ul style="list-style-type: none"> • promotion and enforcement of landfill bans may improve diversion 	<ul style="list-style-type: none"> • landfill bans proven method for encouraging diversion but banned materials likely disposed with garbage

Residential Existing System, Reliability, Proven Technology (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Curbside collection of Blue Box materials from single family dwellings. Typical materials include at least ONP, PET, HDPE, glass, ferrous, aluminum • Expanded curbside collection to collect additional dry materials in some municipalities • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • technology proven, but inefficient and expensive • curbside collection of recyclables divert waste from landfill for recycling into useful material 	<ul style="list-style-type: none"> • improve system efficiency through new collection methods • strong promotion/education program to minimize contamination 	<ul style="list-style-type: none"> • recycling of waste products proven to contribute to waste diversion
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> • technology proven, but may be improved 	<ul style="list-style-type: none"> • resolve most efficient collection method to minimize operational/compost quality problems (e.g. optimize debagging) 	<ul style="list-style-type: none"> • curbside/depot collection/proven for diversion of residential leaf yard waste from landfill
<p>Residential Household Composting</p> <ul style="list-style-type: none"> • Backyard composter distribution programs • Large 3-bin composting units distributed to apartment and co-operative housing complexes • Limited community composting • Limited vermicomposting 	<ul style="list-style-type: none"> • proven technology, popular with some householders • reduces waste requiring management at curb • some residents with composters do not use them effectively • improper use may result in inactive composters or vermin • low level of technology contributes to reliability 	<ul style="list-style-type: none"> • provide free information on correct usage (strong education program) • personal contact with user is valuable education tool to enhance effective use 	<ul style="list-style-type: none"> • home composting proven low-technology method contributing to waste diversion • generates useful end product (compost) and options • promotes responsibility for waste management at home and reduces waste requiring management at curb • some residents do not use composters effectively

Residential Existing System, Reliability, Proven Technology (cont'd)

<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods. • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • technology proven, but expensive • diverts toxic contaminants from landfill • bulky items not disposed may extend landfill life • protects useful materials for recycling 	<ul style="list-style-type: none"> • increase participation through more promotion • provide more incentives to divert HHW 	<ul style="list-style-type: none"> • provision of special services proven to reduce waste quantities sent for disposal • removal of hazardous contaminants from waste stream and reduces hazards in landfills
<p>Composting Facilities</p> <ul style="list-style-type: none"> • Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> • technology proven, but has some operational problems • odour concerns can be problematic • compost quality may be poor because of contamination, limiting end uses of material • technology achieves approximately 50% mass reduction • technology achieves approximately 80% volume reduction for leaves 	<ul style="list-style-type: none"> • use of state-of-the-art technology and practices • encourage source separation of organics • conduct adequate/appropriate processing of materials prior to composting • careful process control essential to successful composting 	<ul style="list-style-type: none"> • proven to reduce to overall volume and weight of organic waste if properly controlled • levels of contamination may affect compost quality • diversion maximized if compost can be sold

Residential Existing System, Reliability, Proven Technology (cont'd)

<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> • Municipal reuse centre • Private reuse centre (e.g. Re-Uze, Scarborough) • Non-profit reuse centre (WASTEWISE, Halton) • Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.). • Food reuse organization (such as Second Harvest). • Special goods exchange days 	<ul style="list-style-type: none"> • proven technology: experience is that this component is very popular with the public • good educational vehicle • re-use is above recycling on hierarchy 	<ul style="list-style-type: none"> • draw more individuals in through promotion/education • provide more funding for re-use activities 	<ul style="list-style-type: none"> • proven method (which is higher than recycling on 3R's hierarchy) for keeping material out of waste stream for longer period
<p>MRFs</p> <ul style="list-style-type: none"> • Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. • Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables 	<ul style="list-style-type: none"> • proven technology but constantly being redesigned for improvement • processing adds value to materials allowing diversion from disposal • may be subject to mechanical failure • subject to material build-up when markets not available • reliability achieved since processing generally labour intensive and low-tech 	<ul style="list-style-type: none"> • careful attention to effective separation • constant maintenance of facility • incorporate storage capacity 	<ul style="list-style-type: none"> • proven method: processing adds value to materials allowing diversion from disposal
<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not served by recycling • Drop-off depot for rural households 	<ul style="list-style-type: none"> • proven technology, experience varies • provide practical option for recycling in small communities • small and unsophisticated facility needed • material contamination can reduce positive effect 	<ul style="list-style-type: none"> • monitoring/supervision improves quality of material received • promotion/education increases participation and effective use 	<ul style="list-style-type: none"> • proven method for providing opportunity for diversion to households not served with collection and for additional back-up service

Residential Existing System, Reliability, Proven Technology (cont'd)

Residential Promotion and Education <ul style="list-style-type: none">• 3Rs promotion and education program, focused on the residential sector• Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc.	<ul style="list-style-type: none">• proven technology, experience is that this is an essential element of any successful recycling program• positive effect by encouraging effective participation in diversion programs• effect of promotion/education may decrease when promotion/education ceased	<ul style="list-style-type: none">• determine areas where additional promotion/education needed and constantly redesign programs• maintain on-going promotion/education	<ul style="list-style-type: none">• proven method for by increasing householder awareness and knowledge level on waste diversion opportunities benefits, and effective practices
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TABLE P-1.1
RESIDENTIAL EXISTING SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Residential Existing
CRITERIA GROUP: Service
CRITERIA: Reliability
INDICATOR: Degree of Reliance on Single Approach

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors. • Self haul of waste to landfills and transfer stations by residents. • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • several methods to encourage diversion such as landfill bans and surcharges, level of service 	<ul style="list-style-type: none"> • implement waste diversion components in conjunction with garbage collection/disposal service 	<ul style="list-style-type: none"> • array of waste diversion method linked to garbage collection can be used to encourage diversion

Residential Existing System, Reliability, Single Approach (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Curbside collection of Blue Box materials from single family dwellings. Typical materials include at least ONP, PET, HDPE, glass, ferrous, aluminum • Expanded curbside collection to collect additional dry materials in some municipalities • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • not entirely dependent on single approach for diversion of dry materials since many trucks used, and since depots exist to deliver materials not collected • relies on willingness of residents to participate 	<ul style="list-style-type: none"> • promotion/education to encourage participation • maintain spare vehicles 	<ul style="list-style-type: none"> • not entirely dependent on single approach for diversion of dry materials since many trucks used, and since depots exist to deliver materials not collected • willingness of public to participate can be encouraged through promotion/education
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> • not entirely dependent on single approach for diversion of leaf and yard waste since various collection methods can be used, backyard composters are distributed and depots exist to drop-off leaf and yard waste • relies on public willingness to participate 	<ul style="list-style-type: none"> • promotion/education • increase distribution of backyard composters 	<ul style="list-style-type: none"> • not entirely dependent on single approach for diversion of leaf and yard waste since various collection methods can be used, backyard composters are distributed and depots exist to drop-off leaf and yard waste • willingness to participate can be encouraged through promotion/education
<p>Residential Household Composting</p> <ul style="list-style-type: none"> • Backyard composter distribution programs • Large 3-bin composting units distributed to apartment and co-operative housing complexes • Limited community composting • Limited vermicomposting 	<ul style="list-style-type: none"> • not dependent on single type of technology (bin) • operates in conjunction with leaf and yard waste collection • unsophisticated technology provides reliability • individual units means that likely some effective use always achieved • relies on voluntary use • few other options exist for diverting food waste 	<ul style="list-style-type: none"> • maintain public interest and effective use through promotion education incentives • maintain diversity of types of bins available to suit residents' needs 	<ul style="list-style-type: none"> • reliability of system enhanced by providing backyard composters for diversion of household organic waste • promotion/education can encourage use of home composters

Residential Existing System, Reliability, Single Approach (cont'd)

<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods. • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • uses several approaches for diversion of materials requiring special services • relies on public willingness to participate 	<ul style="list-style-type: none"> • ensure/maintain range of services provided • promotion/education to maximize diversion 	<ul style="list-style-type: none"> • several collection and drop-off services provide additional opportunities to divert waste from disposal, particularly if well-promoted
<p>Composting Facilities</p> <ul style="list-style-type: none"> • Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> • dependent on single approach or technology for processing organics collected at curb 	<ul style="list-style-type: none"> • increase sites for composting • make arrangements to take organics to other sites in event of failure • increase distribution and promotion of backyard composters 	<ul style="list-style-type: none"> • potential bottleneck if sites limited • backyard composting serves as backup enhancing reliability

Residential Existing System, Reliability, Single Approach (cont'd)

<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> • Municipal reuse centre • Private reuse centre (e.g. Re-Use, Scarborough) • Non-profit reuse centre (WASTEWISE, Halton) • Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.). • Food reuse organization (such as Second Harvest). • Special goods exchange days 	<ul style="list-style-type: none"> • depends on public willingness to use second-hand goods • several different services for diversion of a range of materials 	<ul style="list-style-type: none"> • increase, support and promote reuse activities 	<ul style="list-style-type: none"> • reliable approach through several services but depends on public willingness to use second-hand goods
<p>MRFs</p> <ul style="list-style-type: none"> • Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. • Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables 	<ul style="list-style-type: none"> • relies on single approach for diversion of dry recyclables 	<ul style="list-style-type: none"> • design MRF with excess capacity or build more MRFs • make contingency arrangements with alternative facilities 	<ul style="list-style-type: none"> • relies on single approach for diversion of dry recyclables but excess capacity and contingency arrangements enhances reliability
<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not served by recycling • Drop-off depot for rural households 	<ul style="list-style-type: none"> • provides additional opportunities for collection of recyclables • not dependent on single facility due to availability of several depots • for residents not served by collection programs, requires delivery (greater effort) 	<ul style="list-style-type: none"> • expand current facilities in convenient locations as required • promotion/education 	<ul style="list-style-type: none"> • increased opportunity for diversion through depots adds reliability though relies on greater effort by residents

Residential Existing System, Reliability, Single Approach (cont'd)

Residential Promotion and Education <ul style="list-style-type: none">• 3Rs promotion and education program, focused on the residential sector• Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc.	<ul style="list-style-type: none">• variety of approaches/mediums used to enhance other system components	<ul style="list-style-type: none">• use as many mediums as possible for promotion/education	<ul style="list-style-type: none">• variety of promotion/education programs increases reliability through encouragement of participation in waste diversion
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TABLE P-1.1
RESIDENTIAL EXISTING SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Residential Existing
CRITERIA GROUP: Service
CRITERIA: Flexibility
INDICATOR: Types and Range of Quantities of Waste Accepted

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors. • Self haul of waste to landfills and transfer stations by residents. • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • landfill bans and garbage collection restriction can be applied to selected materials adding flexibility 	<ul style="list-style-type: none"> • little mitigation/enhancement required • implement waste diversion measures in conjunction with garbage collection/disposal restrictions 	<ul style="list-style-type: none"> • bans, surcharges and other approaches can be applied to specific materials to enhance diversion

Residential Existing System, Flexibility, Types and Quantities (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Curbside collection of Blue Box materials from single family dwellings. Typical materials include at least ONP, PET, HDPE, glass, ferrous, aluminum • Expanded curbside collection to collect additional dry materials in some municipalities • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • limited range of dry materials collected • some materials may be added to diversion programs 	<ul style="list-style-type: none"> • add materials which can be readily managed • encourage increased and effective participation through promotion/education • consider technological advances which are appropriate 	<ul style="list-style-type: none"> • limited flexibility to increase volume and range of materials collected for diversion
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> • manages only leaf and yard wastes generated by residential sources • waste diversion enhanced by removing seasonal organic materials from waste stream • additional quantities can be accepted for diversion • increased quantities may require new composting facilities 	<ul style="list-style-type: none"> • increase availability of residential collection service • extend seasonal collection periods and special collections (ie. Christmas) • implement supporting landfill and curbside bans (Oakville) – to increase quantity collected • focus promotion/education campaigns on source separation of leaf and yard waste 	<ul style="list-style-type: none"> • limited flexibility in range of materials but flexible in quantities managed

Residential Existing System, Flexibility, Types and Quantities (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • Backyard composter distribution programs • Large 3-bin composting units distributed to apartment and co-operative housing complexes • Limited community composting • Limited vermicomposting 	<ul style="list-style-type: none"> • does not handle any dry household wastes • accepts food as well as yard waste generated by households but diversion limited for food waste (one of only methods for food waste diversion and large number of multi-family buildings) • offers flexibility to residents to divert small quantities of leaf and yard waste and food waste at any time • quantities of materials accepted limited by size of bin • limited ability to adapt to changing characteristics or quantities: <ul style="list-style-type: none"> – range of materials accepted limited by type of bin – range and quantity effected by participation and proper usage 	<ul style="list-style-type: none"> • encourage residents to place all appropriate material in composters • facilitate distribution of composters (incentives, location etc.) • distribution of larger bins and increase number of bins allocated/household • promotion/education program 	<ul style="list-style-type: none"> • provides good opportunity to divert limited amounts of food and leaf and yard waste. Particularly limited for food waste as one of only methods for diverting food and because of large number of multi-family buildings
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Residential Existing System, Flexibility, Types and Quantities (cont'd)

<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p>	<ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods. • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • small quantities of HHW can be managed • limited quantities of other materials handled • collection is flexible to accommodate increased volume and range of materials 	<ul style="list-style-type: none"> • expand existing facilities and services • increase range of materials accepted • promotion/education to ensure public participation 	<ul style="list-style-type: none"> • diverts limited quantities and range of materials but these opportunities may be increased
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Residential Existing System, Flexibility, Types and Quantities (cont'd)

<p>Composting Facilities</p> <ul style="list-style-type: none"> Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> handles organic materials (leaf and yard only) generated by households quantities handled depend on design capacity of facility (no limitations) does not handle dry materials generated by households range of materials limited to clean leaf and yard waste for highest quality product limited capacity at existing GTA facilities; increased capacity may require new facilities 	<ul style="list-style-type: none"> improve technology and efficiency of existing facilities to permit more efficient processing and increased annual capacity expand existing or build new facilities as required carefully control quality of incoming feedstream, so finished compost will have unrestricted use 	<ul style="list-style-type: none"> manages leaf and yard waste only flexibility to manage variable quantities of leaf and yard waste
<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> Municipal reuse centre Private reuse centre (e.g. Re-Uze, Scarborough) Non-profit reuse centre (WASTEWISE, Halton) Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.). Food reuse organization (such as Second Harvest). Special goods exchange days 	<ul style="list-style-type: none"> accepts limited range of materials quantities generally low – limited to public willingness to reuse goods well suited to adapt to changing waste characteristics and quantities leading to increased waste diversion provides opportunity to divert materials for which recycling is not technically feasible 	<ul style="list-style-type: none"> expand network of reuse opportunities identify uses for wider range of materials provide residential collection where possible increased promotion and education 	<ul style="list-style-type: none"> manages limited range of materials but well suited to adapt to changes in behaviours and demand

Residential Existing System, Flexibility, Types and Quantities (cont'd)

<p>MRFs</p> <ul style="list-style-type: none"> • Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. • Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables 	<ul style="list-style-type: none"> • quantities accepted depend on MRF capacity – existing MRFs have limited capacity • types of waste received are limited to dry recyclables for which markets are available • increase in quantity or type of material collected will require expansion of existing facilities • changes in characteristics will require processing adaptations 	<ul style="list-style-type: none"> • increase size and number of facilities as required • increase accepted range of source separated materials where possible • increase efficiency of existing MRFs • increase efficiency in processing facilities through improved front end residential source separation • improve MRF sorting techniques to reduce mistaken disposal of recyclables • modify MRF designs to handle larger quantities and more types of dry recyclables 	<ul style="list-style-type: none"> • limited flexibility to establish/expand facilities to process dry recyclables for marketing and diversion
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Residential Existing System, Flexibility, Types and Quantities (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not served by recycling • Drop-off depot for rural households 	<ul style="list-style-type: none"> • types of materials accepted depend on depot, generally dry residential recyclables for which markets available • quantities accepted vary with depot design, size of site, etc. • domes can increase source separation and increase efficiency of MRF • changing characteristics or quantities results in larger depot sites required • diversion can be limited by poor source separation • quantities limited by convenience to residents 	<ul style="list-style-type: none"> • increase number of compartmentalized domes available to residents • increase number of depot facilities with expanded range of materials • more frequent collection from existing sites • greater number of containers per site • improve source separation with monitoring and promotion/ education • improve convenience of depots to residents (e.g. number depots and access) • provide residents with household containers (Blue Boxes) for storage and transport 	<ul style="list-style-type: none"> • flexible to handle wide range and quantity of materials and well suited to adapt to changes through promotion/education, increased capacity
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. 	<ul style="list-style-type: none"> • educates public re: new materials accepted (changes) and encourages greater quantities diverted through greater participation 	<ul style="list-style-type: none"> • little mitigation/enhancement required 	<ul style="list-style-type: none"> • education used to support diversion of additional materials and greater quantities of materials

TABLE P-1.1
RESIDENTIAL EXISTING SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Residential Existing
CRITERIA GROUP: Service
CRITERIA: Flexibility
INDICATOR: Compatibility with Existing System

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors. • Self haul of waste to landfills and transfer stations by residents. • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable

Residential Existing System, Flexibility, Compatibility (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Curbside collection of Blue Box materials from single family dwellings. Typical materials include at least ONP, PET, HDPE, glass, ferrous, aluminum • Expanded curbside collection to collect additional dry materials in some municipalities • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable
<p>Residential Household Composting</p> <ul style="list-style-type: none"> • Backyard composter distribution programs • Large 3-bin composting units distributed to apartment and co-operative housing complexes • Limited community composting • Limited vermicomposting 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable

Residential Existing System, Flexibility, Compatibility (cont'd)

<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods. • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable
<p>Composting Facilities</p> <ul style="list-style-type: none"> • Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable

Residential Existing System, Flexibility, Compatibility (cont'd)

Reuse Centres and Activities <ul style="list-style-type: none"> • Municipal reuse centre • Private reuse centre (e.g. Re-Uze, Scarborough) • Non-profit reuse centre (WASTEWISE, Halton) • Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.). • Food reuse organization (such as Second Harvest). • Special goods exchange days 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable
MRFs <ul style="list-style-type: none"> • Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. • Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable
Residential Recycling Depots and Transfer Stations <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not served by recycling • Drop-off depot for rural households 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable

Residential Existing System, Flexibility, Compatibility (cont'd)

<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable 	<ul style="list-style-type: none"> • not applicable
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TABLE P-1.1
RESIDENTIAL EXISTING SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Residential Existing
 CRITERIA GROUP: Service
 CRITERIA: Performance
 INDICATOR: Quantity Diverted or Requiring Landfilling

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors. • Self haul of waste to landfills and transfer stations by residents. • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • 69% to 81% waste stream landfilled • difficult to quantify effects of landfill bans and other collection/disposal restrictions 	<ul style="list-style-type: none"> • increase/enhance 3Rs programs • expand markets 	<ul style="list-style-type: none"> • 69% to 81% waste stream landfilled • difficult to quantify effects of landfill bans and other collection/disposal restrictions

Residential Existing System, Performance, Quantities (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Curbside collection of Blue Box materials from single family dwellings. Typical materials include at least ONP, PET, HDPE, glass, ferrous, aluminum • Expanded curbside collection to collect additional dry materials in some municipalities • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • existing blue box programs result in estimated diversion of 10% to 14% of residential waste stream 	<ul style="list-style-type: none"> • increase and expand existing residential recycling and collection program 	<ul style="list-style-type: none"> • estimated diversion of 10% to 14% residential waste stream
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> • an estimated 2.4 to 11.1% of residential waste stream diverted through residential leaf and yard waste collection programs 	<ul style="list-style-type: none"> • expand existing residential leaf and yard waste collection programs • increase public participation through promotion/education • increase frequency of collection in peak seasonal periods 	<ul style="list-style-type: none"> • an estimated 2.4 to 11.1% of residential waste stream diverted through residential leaf and yard waste collection programs
<p>Residential Household Composting</p> <ul style="list-style-type: none"> • Backyard composter distribution programs • Large 3-bin composting units distributed to apartment and co-operative housing complexes • Limited community composting • Limited vermicomposting 	<ul style="list-style-type: none"> • average 169 kg/hh/yr diverted through residential household composting • an estimated 1.7% to 3.2% of residential waste stream diverted 	<ul style="list-style-type: none"> • maintain and increase availability of residential household composting programs • provide bins to all small apartment/co-operative housing units • expand community composting network • provide incentives for use of backyard composting units 	<ul style="list-style-type: none"> • an estimated 1.7% to 3.2% of residential waste stream diverted at a very economical level, as waste does not reach the curb

Residential Existing System, Performance, Quantities (cont'd)

<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods. • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • an estimate of quantities diverted included in depots components 	<ul style="list-style-type: none"> • increase accessibility of diversion opportunities • provide incentives for participation • encourage participation through promotion/education programs 	<ul style="list-style-type: none"> • an estimate of quantities diverted included in depots components
<p>Composting Facilities</p> <ul style="list-style-type: none"> • Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> • diversion increased if finished compost marketable • composting reduces mass of materials by up to 50% and volume of leaves by up to 80% • quantity diverted varies depending on program. 	<ul style="list-style-type: none"> • increase efficiency of existing facilities • improve source separation of materials to reduce residuals sent to landfill 	<ul style="list-style-type: none"> • diversion increased of finished compost marketable • composting reduces mass of materials by up to 50% and volume of leaves by up to 80% • potential for increased waste diversion and reduced waste disposal

Residential Existing System, Performance, Quantities (cont'd)

<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> • Municipal reuse centre • Private reuse centre (e.g. Re-Uze, Scarborough) • Non-profit reuse centre (WASTEWISE, Halton) • Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.). • Food reuse organization (such as Second Harvest). • Special goods exchange days 	<ul style="list-style-type: none"> • positive effect of waste diversion not reliably estimated 	<ul style="list-style-type: none"> • increase public awareness and encourage participation through promotion/education 	<ul style="list-style-type: none"> • positive effect of waste diversion not reliably estimated
<p>MRFs</p> <ul style="list-style-type: none"> • Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. • Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables 	<ul style="list-style-type: none"> • positive effect through processing an estimated 11%-18% of residential waste stream 	<ul style="list-style-type: none"> • improve source separation • improve collection and processing technology to reduce contamination/breakage and produce superior quality end product 	<ul style="list-style-type: none"> • positive effect through an estimated 11% to 18% diversion
<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not served by recycling • Drop-off depot for rural households 	<ul style="list-style-type: none"> • diverts 1%-4% of residential waste stream • material contamination can reduce positive effects 	<ul style="list-style-type: none"> • monitor depots to reduce contamination and thus materials disposed 	<ul style="list-style-type: none"> • diverts 1%-4% of residential waste stream • material contamination can reduce positive effects • potential for increased waste diversion and reduced waste disposal

Residential Existing System, Performance, Quantities (cont'd)

<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. 	<ul style="list-style-type: none"> • diversion specific to promotion not easily quantified • 3R's personnel agree promotion/education can support improvement of recycling/diversion practices, resulting in positive environmental effect 	<ul style="list-style-type: none"> • maintain and expand existing promotion/education campaigns as required 	<ul style="list-style-type: none"> • diversion specific to promotion not easily quantified • 3R's personnel agree promotion/education can support improvement of recycling/diversion practices, resulting in positive environmental effect
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TABLE P-1.2
RESIDENTIAL EXISTING/COMMITTED SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Residential Existing/Committed
 CRITERIA GROUP: Service
 CRITERIA: Reliability
 INDICATOR: Proven Technologies based on Experience in Other Jurisdictions

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors. • Self haul of waste to landfills and transfer stations by residents. • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • as per Existing System • additional legislation (e.g. collection ban on grass clippings) proven to enhance waste diversion 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System • additional legislation proven to enhance waste diversion

Residential Existing/Committed System, Reliability, Proven Technology (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • Expansion of curbside collection of Blue Box materials from single family dwellings in some municipalities to include all materials designated basic Blue Box waste and at least two materials designated as supplementary Blue Box waste in the 3Rs Regulations • Curbside collection of additional dry materials • Recycling services at all multi-family buildings with 6 or more units (3Rs Regulations) • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • as per Existing System • mandatory Blue Box recycling legislation proven to enhance diversion (though most municipalities already comply for single-family service) 	<ul style="list-style-type: none"> • as per Existing System • monitor compliance with regulations • improve system efficiency through new designs • support initiatives with promotion/education programs to encourage participation • expand services to all municipalities • increased level of service (i.e. number of materials collected) • strong promotion/education program to minimize contamination 	<ul style="list-style-type: none"> • as per Existing System • mandatory recycling regulation proven to enhance diversion and optimized through monitoring compliance
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> • no additional effect noted 	<ul style="list-style-type: none"> • none required 	<ul style="list-style-type: none"> • no additional effect noted

Residential Existing/Committed System, Reliability, Proven Technology (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • Backyard composter distribution programs • Large 3-bin composting units distributed to apartment and co-operative housing complexes • Additional community composting • Additional vermicomposting 	<ul style="list-style-type: none"> • as per Existing System • no additional effect noted 	<ul style="list-style-type: none"> • as per Existing System • no additional required 	<ul style="list-style-type: none"> • as per Existing System • no additional effect noted
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.). • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing System • no additional effect noted 	<ul style="list-style-type: none"> • as per Existing System • no additional required 	<ul style="list-style-type: none"> • as per Existing System • no additional effect noted

Residential Existing/Committed System, Reliability, Proven Technology (cont'd)

Composting Facilities <ul style="list-style-type: none"> Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> as per Existing System no additional effect noted 	<ul style="list-style-type: none"> as per Existing System no additional required 	<ul style="list-style-type: none"> as per Existing System no additional effect noted
Reuse Centres and Activities <ul style="list-style-type: none"> Municipal reuse centre Private reuse centre (e.g. Re-Uze, Scarborough) Non-profit reuse centre (WASTEWISE, Halton) Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) Food reuse organization (such as Second Harvest) Special goods exchange days 	<ul style="list-style-type: none"> as per Existing System no additional effect noted 	<ul style="list-style-type: none"> as per Existing System no additional required 	<ul style="list-style-type: none"> as per Existing System no additional effect noted
MRFs <ul style="list-style-type: none"> Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables 	<ul style="list-style-type: none"> as per Existing System no additional effect noted 	<ul style="list-style-type: none"> as per Existing System no additional required 	<ul style="list-style-type: none"> as per Existing System no additional effect noted

Residential Existing/Committed System, Reliability, Proven Technology (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • as per Existing System • community recycling centre proves to enhance diversion of waste materials 	<ul style="list-style-type: none"> • as per Existing System • promotion/education use of depot infrastructure 	<ul style="list-style-type: none"> • as per Existing System • community recycling centre proven to enhance diversion of waste materials
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc 	<ul style="list-style-type: none"> • as per Existing System • no additional effect noted 	<ul style="list-style-type: none"> • as per Existing System • no additional required 	<ul style="list-style-type: none"> • as per Existing System • no additional effect noted

TABLE P-1.2
RESIDENTIAL EXISTING/COMMITTED SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Residential Existing/Committed
 CRITERIA GROUP: Service
 CRITERIA: Reliability
 INDICATOR: Degree of Reliance on Single Approach

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors. • Self haul of waste to landfills and transfer stations by residents. • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • as per Existing System • additional legislation may provide additional reliability 	<ul style="list-style-type: none"> • as per Existing System • experiment with various legislative/regulatory approaches to identify most suitable approach for each constituency 	<ul style="list-style-type: none"> • as per Existing System • additional legislation may provide additional reliability

Residential Existing/Committed System, Reliability, Single Approach (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • Expansion of curbside collection of Blue Box materials from single family dwellings in some municipalities to include all materials designated basic Blue Box waste and at least two materials designated as supplementary Blue Box waste in the 3Rs Regulations • Curbside collection of additional dry materials • Recycling services at all multi-family buildings with 6 or more units (3Rs Regulations) • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • as per Existing System • Blue Box recycling mandate may enhance voluntary recycling • legislation allows different curbside collection systems • relies on willingness of residents to participate 	<ul style="list-style-type: none"> • as per Existing System • identify best approach to meet needs and budget 	<ul style="list-style-type: none"> • as per Existing System • Blue Box recycling mandate may enhance voluntary recycling and allows various programs • relies on voluntary public participation
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> • as per Existing System • mandatory provision of service may enhance reliability • relies on willingness of residents to participate 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System • mandatory provision of service may enhance reliability but still relies on voluntary participation by residents

Residential Existing/Committed System, Reliability, Single Approach (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • Backyard composter distribution programs • Large 3-bin composting units distributed to apartment and co-operative housing complexes • Additional community composting • Additional vermicomposting 	<ul style="list-style-type: none"> • as per Existing System • additional composters distributed adds opportunities to divert organic waste • one of only methods for diversion of food waste • relies on voluntary use 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System • additional composters distributed adds opportunities to divert organic waste • one of only methods for diversion of food waste
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.). • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing System • no additional effect noted 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System • no additional effect noted

Residential Existing/Committed System, Reliability, Single Approach (cont'd)

<p>Composting Facilities</p> <ul style="list-style-type: none"> Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> as per Existing System no additional effect noted 	<ul style="list-style-type: none"> as per Existing System 	<ul style="list-style-type: none"> as per Existing System no additional effect noted
<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> Municipal reuse centre Private reuse centre (e.g. Re-Uze, Scarborough) Non-profit reuse centre (WASTEWISE, Halton) Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) Food reuse organization (such as Second Harvest) Special goods exchange days 	<ul style="list-style-type: none"> as per Existing System no additional effect noted 	<ul style="list-style-type: none"> as per Existing System 	<ul style="list-style-type: none"> as per Existing System no additional effect noted
<p>MRFs</p> <ul style="list-style-type: none"> Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables 	<ul style="list-style-type: none"> as per Existing System no additional effect noted 	<ul style="list-style-type: none"> as per Existing System 	<ul style="list-style-type: none"> as per Existing System no additional effect noted

Residential Existing/Committed System, Reliability, Single Approach (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • as per Existing System • additional depots in communities (community recycling centres and satellite depots) add opportunities to recycle 	<ul style="list-style-type: none"> • as per Existing System • promotion/education on community recycling centres 	<ul style="list-style-type: none"> • as per Existing System • reliability enhanced by additional opportunities for recycling at community recycling centres and depots
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc 	<ul style="list-style-type: none"> • as per Existing System • no additional effect noted 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System • no additional effect noted

TABLE P-1.2
RESIDENTIAL EXISTING/COMMITTED SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Residential Existing/Committed
CRITERIA GROUP: Service
CRITERIA: Flexibility
INDICATOR: Types and Range of Quantities of Waste Accepted

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors. • Self haul of waste to landfills and transfer stations by residents. • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System

Residential Existing/Committed System, Flexibility, Types and Quantities (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • Expansion of curbside collection of Blue Box materials from single family dwellings in some municipalities to include all materials designated basic Blue Box waste and at least two materials designated as supplementary Blue Box waste in the 3Rs Regulations • Curbside collection of additional dry materials • Recycling services at all multi-family buildings with 6 or more units (3Rs Regulations) • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • as per Existing System (most programs already designed to comply with 3Rs Regulations) • additional multi-family service required by 3Rs Regulations will increase quantities collected 	<ul style="list-style-type: none"> • as per Existing System • promotion/education particularly directed to multi-family buildings 	<ul style="list-style-type: none"> • as per Existing System • additional multi-family service required by 3Rs regulations will increase quantities collected, particularly if effectively promoted
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> • as per Existing System • mandatory provision of leaf and yard waste service required by 3Rs Regulations may increase quantities (not range) of material handled 	<ul style="list-style-type: none"> • as per Existing System • promotion/education regarding additional services 	<ul style="list-style-type: none"> • as per Existing System • mandatory provision of leaf and yard waste service required by 3Rs Regulations may increase quantities (not range) of material handled

Residential Existing/Committed System, Flexibility, Types and Quantities (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • Backyard composter distribution programs • Large 3-bin composting units distributed to apartment and co-operative housing complexes • Additional community composting • Additional vermicomposting 	<ul style="list-style-type: none"> • as per Existing System • additional composters distributed may increase quantities diverted • limited flexibility to divert food waste (one of only methods and because of large number of multi-family buildings) 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System • additional composters distributed may increase quantities diverted • limited flexibility to divert food waste (one of only methods and because of large number of multi-family buildings)
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.). • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing System • no additional effect noted 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System • no additional effect noted

Residential Existing/Committed System, Flexibility, Types and Quantities (cont'd)

Composting Facilities <ul style="list-style-type: none"> Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> as per Existing System no additional effect noted 	<ul style="list-style-type: none"> as per Existing System 	<ul style="list-style-type: none"> as per Existing System no additional effect noted
Reuse Centres and Activities <ul style="list-style-type: none"> Municipal reuse centre Private reuse centre (e.g. Re-Uze, Scarborough) Non-profit reuse centre (WASTEWISE, Halton) Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) Food reuse organization (such as Second Harvest) Special goods exchange days 	<ul style="list-style-type: none"> as per Existing System no additional effect noted 	<ul style="list-style-type: none"> as per Existing System 	<ul style="list-style-type: none"> as per Existing System no additional effect noted
MRFs <ul style="list-style-type: none"> Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables 	<ul style="list-style-type: none"> as per Existing System no additional effect noted 	<ul style="list-style-type: none"> as per Existing System 	<ul style="list-style-type: none"> as per Existing System no additional effect noted

Residential Existing/Committed System, Flexibility, Types and Quantities (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • as per Existing System • community recycling centres and satellite depots add infrastructure to collect more materials, adding flexibility to system 	<ul style="list-style-type: none"> • as per Existing System • promotion/education on community recycling centres and depots 	<ul style="list-style-type: none"> • as per Existing System • community recycling centres and satellite depots add infrastructure to collect more materials, adding flexibility to system
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc 	<ul style="list-style-type: none"> • as per Existing System • no additional effect noted 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System • no additional effect noted

TABLE P-1.2
RESIDENTIAL EXISTING/COMMITTED SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM:	<u>Residential Existing/Committed</u>
CRITERIA GROUP:	<u>Service</u>
CRITERIA:	<u>Flexibility</u>
INDICATOR:	<u>Compatibility with Existing System</u>

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors. • Self haul of waste to landfills and transfer stations by residents. • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • no effect noted 	<ul style="list-style-type: none"> • none required 	<ul style="list-style-type: none"> • no effect noted

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • Expansion of curbside collection of Blue Box materials from single family dwellings in some municipalities to include all materials designated basic Blue Box waste and at least two materials designated as supplementary Blue Box waste in the 3Rs Regulations • Curbside collection of additional dry materials • Recycling services at all multi-family buildings with 6 or more units (3Rs Regulations) • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • may require increased collection frequency or shortened routes for collection 	<ul style="list-style-type: none"> • revise collection schedules as required and collection systems and technologies to respond to increased quantities and range of materials 	<ul style="list-style-type: none"> • compatible with Existing System • places higher load on existing collection system which can be mitigated by changes to schedules, routes and collection technologies
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> • may require increased collection frequency or shortened routes for collection 	<ul style="list-style-type: none"> • revise collection schedules and collection technologies to respond to increased quantities of materials 	<ul style="list-style-type: none"> • compatible with Existing System • places higher load on existing collection system which can be mitigated by changes to schedules, routes and collection technologies

Residential Existing/Committed System, Flexibility, Compatibility (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • Backyard composter distribution programs • Large 3-bin composting units distributed to apartment and co-operative housing complexes • Additional community composting • Additional vermicomposting 	<ul style="list-style-type: none"> • no additional effect noted 	<ul style="list-style-type: none"> • no additional required 	<ul style="list-style-type: none"> • no additional effect noted
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.). • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • no additional effect noted 	<ul style="list-style-type: none"> • no additional required 	<ul style="list-style-type: none"> • no additional effect noted

Residential Existing/Committed System, Flexibility, Compatibility (cont'd)

<p>Composting Facilities</p> <ul style="list-style-type: none"> Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> no effect noted compost facilities may be expanded to handle increased quantities of leaf and yard waste 	<ul style="list-style-type: none"> expand/modify facilities as required 	<ul style="list-style-type: none"> compatible with Existing System: compost facilities may be expanded to handle increased quantities of leaf and yard waste
<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> Municipal reuse centre Private reuse centre (e.g. Re-Uze, Scarborough) Non-profit reuse centre (WASTEWISE, Halton) Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) Food reuse organization (such as Second Harvest) Special goods exchange days 	<ul style="list-style-type: none"> no additional effect noted 	<ul style="list-style-type: none"> no additional required 	<ul style="list-style-type: none"> no additional effect noted
<p>MRFs</p> <ul style="list-style-type: none"> Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables 	<ul style="list-style-type: none"> MRFs may be expanded or would modify operations to handle increased quantities of dry material 	<ul style="list-style-type: none"> none required 	<ul style="list-style-type: none"> compatible with Existing System: MRFs would expand/modify operation to handle increased dry material flows

Residential Existing/Committed System, Flexibility, Compatibility (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • community recycling centres will operate in conjunction with Existing components 	<ul style="list-style-type: none"> • none required • promotion/education to ensure awareness of various services 	<ul style="list-style-type: none"> • compatible with Existing System - community recycling centre operate in conjunction with Existing components
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc 	<ul style="list-style-type: none"> • no additional effect noted 	<ul style="list-style-type: none"> • no additional required 	<ul style="list-style-type: none"> • no additional effect noted

TABLE P-1.2
RESIDENTIAL EXISTING/COMMITTED SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM:	<u>Residential Existing/Committed</u>
CRITERIA GROUP:	<u>Service</u>
CRITERIA:	<u>Performance</u>
INDICATOR:	<u>Quantity Diverted or Requiring Landfilling</u>

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors. • Self haul of waste to landfills and transfer stations by residents. • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • 67% to 79% of waste stream disposed at landfill • difficult to quantify effects of landfill bans and other collection/disposed restrictions 	<ul style="list-style-type: none"> • increase/enhance 3Rs components • expand markets 	<ul style="list-style-type: none"> • 67% to 79% of waste stream disposed at landfill • difficult to quantify effects of landfill bans and other collection/disposed restrictions

Residential Existing/Committed System, Performance, Quantities (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • Expansion of curbside collection of Blue Box materials from single family dwellings in some municipalities to include all materials designated basic Blue Box waste and at least two materials designated as supplementary Blue Box waste in the 3Rs Regulations • Curbside collection of additional dry materials • Recycling services at all multi-family buildings with 6 or more units (3Rs Regulations) • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • Existing/Committed recyclables collection programs result in an estimated 11% to 15% diversion of residential waste stream 	<ul style="list-style-type: none"> • promotion/education to increase participation and recovery • extend/expand collection programs 	<ul style="list-style-type: none"> • an estimated diversion of 11% to 15% of residential waste stream
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> • an estimated in diversion of 7%-9% of residential waste stream 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • an estimated in diversion of 7%-9% of residential waste stream

Residential Existing/Committed System, Performance, Quantities (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • Backyard composter distribution programs • Large 3-bin composting units distributed to apartment and co-operative housing complexes • Additional community composting • Additional vermicomposting 	<ul style="list-style-type: none"> • average 169 kg/hh/yr diverted through residential household composting • can estimated 2% to 3.7% of residential waste stream diverted 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • average 169 kg/hh/yr diverted through residential household composting • can estimated 2% to 3.7% of residential waste stream diverted
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture). • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.). • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System
<p>Composting Facilities</p> <ul style="list-style-type: none"> • Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> • as per Existing System • contributes to processing of 7%-9% of residential waste stream 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System • contributes to processing of 7%-9% of residential waste stream

Residential Existing/Committed System, Performance, Quantities (cont'd)

<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> • Municipal reuse centre • Private reuse centre (e.g. Re-Uze, Scarborough) • Non-profit reuse centre (WASTEWISE, Halton) • Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) • Food reuse organization (such as Second Harvest) • Special goods exchange days 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System
<p>MRFs</p> <ul style="list-style-type: none"> • Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. • Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables 	<ul style="list-style-type: none"> • as per Existing System • contributes to processing of 12%-19% of residential waste stream 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System • contributes to processing of 12%-19% of residential waste stream

Residential Existing/Committed System, Performance, Quantities (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • as per Existing System • could result in diversion of 1%- 4% of residential waste stream 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System • could result in diversion of 1%- 4% of residential waste stream
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System

TABLE P-1.3
RESIDENTIAL DIRECT COST SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM:	<u>Direct Cost</u>
CRITERIA GROUP:	<u>Service</u>
CRITERIA:	<u>Reliability</u>
INDICATOR:	<u>Proven Technologies Based on Experience in Other Jurisdictions</u>

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors • Self haul of waste to landfills and transfer stations by residents • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads • <i>Direct cost system for garbage collection</i> 	<ul style="list-style-type: none"> • direct cost for garbage disposal has been proven to decrease the quantity of garbage collection by up to 40% • may result in initial incidences of illegal dumping • does not generally affect multi-family households 	<ul style="list-style-type: none"> • monitor dumping of waste; source depot sites etc. • encourage community approach to waste diversion through promotion/education • consider ways to add financial incentives to multi-family buildings and, implement promotion/education program for multi-family residents 	<ul style="list-style-type: none"> • proven to contribute to increased waste diversion although some illegal dumping may occur particularly initially • not likely to have any affect on multi-family residents

Direct Cost System, Reliability, Proven Technology (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • Expansion of curbside collection of Blue Box materials from single family dwellings in some municipalities to include all materials designated basic Blue Box waste and at least two materials designated as supplementary Blue Box waste in the 3Rs Regulations • Curbside collection of additional dry materials • Recycling services at all multi-family buildings with 6 or more units • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • direct cost has demonstrated potential to increase residential recycling of dry materials significantly • estimates for GTA lower than other jurisdictions, because recycling systems in GTA are fully developed • may cause greater contamination of recyclables with materials not recycled, and garbage • Direct Cost not likely to effect multi-family residents 	<ul style="list-style-type: none"> • promotion/education to ensure dry materials not contaminated • feedback to residents regarding undesirable materials • strong promotion/education still required for multi-family residents 	<ul style="list-style-type: none"> • demonstrated potential to increase quantities of dry materials collected • with sufficient promotion/education and monitoring, contamination may be minimized • multi-family residents not likely to be affected significantly
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites). 	<ul style="list-style-type: none"> • as per Existing/Committed • no additional effect noted 	<ul style="list-style-type: none"> • as per Existing/Committed • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed • no additional effect noted

Direct Cost System, Reliability, Proven Technology (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • Door to door distribution of backyard composters to 80% of single family households. • Large 3-bin composting units distributed to apartment and co-operative housing complexes • Promotion of vermicomposting to multi-family units • Promotion of community composting 	<ul style="list-style-type: none"> • as per Existing/Committed • extensive distribution and promotion of home composting proven to be effective for diversion of organics in other jurisdictions although some residents do not use them • direct cost likely to cause increase in usage (experienced in other jurisdictions) 	<ul style="list-style-type: none"> • full promotion/education of home composting and personal contact to support direct cost element of program 	<ul style="list-style-type: none"> • extensive distribution and promotion of home composting proven to contribute to increased diversion of organics • Direct cost provides additional incentive to usage
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • proven technology • experience elsewhere indicates that usage of these components likely to increase with implementation of direct cost 	<ul style="list-style-type: none"> • promotion/education to ensure materials uncontaminated 	<ul style="list-style-type: none"> • demonstrated increased diversion through these services • sufficient promotion/education and monitoring will minimize contamination

Direct Cost System, Reliability, Proven Technology (cont'd)

Composting Facilities <ul style="list-style-type: none"> Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effect noted 	<ul style="list-style-type: none"> as per Existing/Committed System no additional required 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effect noted
Reuse Centres and Activities <ul style="list-style-type: none"> Municipal reuse centre Private reuse centre (e.g. Re-Uze, Scarborough) Non-profit reuse centre (WASTEWISE, Halton) Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) Food reuse organization (such as Second Harvest) Special goods exchange days 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effect noted 	<ul style="list-style-type: none"> as per Existing/Committed System no additional required 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effect noted
MRFs <ul style="list-style-type: none"> Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. <i>Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables</i> 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effect noted 	<ul style="list-style-type: none"> as per Existing/Committed System no additional required 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effect noted

Direct Cost System, Reliability, Proven Technology (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effect noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effect noted
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program on direct cost system</i> • <i>Promotion/education program on source reduction/pre-cycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effect noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • promotion/education program explaining direct cost and options for waste diversion • promotion/education required for multi-family residents 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effect noted • increased promotion/education required

TABLE P-1.3
RESIDENTIAL DIRECT COST SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Direct Cost
 CRITERIA GROUP: Service
 CRITERIA: Reliability
 INDICATOR: Degree of Reliance on Single Approach

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors • Self haul of waste to landfills and transfer stations by residents • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads • <i>Direct cost system for garbage collection</i> 	<ul style="list-style-type: none"> • as per Existing/Committed • system relies on levy on each bag of garbage to provide incentive to increase diversion through other systems • levy required to be set to maximize diversion while minimizing undesirable behaviour such as illegal dumping • a simple system, but with some additional administrative requirements • does not likely affect multi-family residents who do not pay directly for their own garbage 	<ul style="list-style-type: none"> • as per Existing/Committed System • strong promotion/education • monitor effects of levy and adjust as required • strong promotion required for multi-family residents since Direct Cost incentive does not apply as readily to them 	<ul style="list-style-type: none"> • relies on pay-by-the-bag levy to increase use of diversion services, but mechanisms fairly simple so as to be reliable • promotion/education also required to encourage participation by multi-family residents

Direct Cost System, Reliability, Single Approach (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • Expansion of curbside collection of Blue Box materials from single family dwellings in some municipalities to include all materials designated basic Blue Box waste and at least two materials designated as supplementary Blue Box waste in the 3Rs Regulations • Curbside collection of additional dry materials • Recycling services at all multi-family buildings with 6 or more units • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • as per Existing/Committed System • illegal dumping may increase for residents not provided with convenient curbside service • no effect likely on multi-family collection since residents generally have internal central disposal system • additional incentive to participate provided by direct cost levy 	<ul style="list-style-type: none"> • as per Existing/Committed System • ensure collection service provided to as many residents as possible • implement promotion/education for multi-family residents 	<ul style="list-style-type: none"> • as per Existing/Committed System • service required by 3Rs regulations likely to minimize illegal dumping by providing options, but contamination may increase • no effect likely on multi-family collection since residents generally have internal central disposal system
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites). 	<ul style="list-style-type: none"> • additional incentive to participate provided by direct cost levy 	<ul style="list-style-type: none"> • no additional required 	<ul style="list-style-type: none"> • additional incentive to participate provided by direct cost levy

Direct Cost System, Reliability, Single Approach (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • Door to door distribution of backyard composters to 80% of single family households. • Large 3-bin composting units distributed to apartment and co-operative housing complexes • Promotion of vermicomposting to multi-family units • Promotion of community composting 	<ul style="list-style-type: none"> • as per Existing/Committed System • reliance on extensive distribution and willingness of residents to use composters • significant additional incentive to use provided by direct cost levy • limited diversion potential for food waste due to number of multi-family buildings (one of few methods for diversion of food waste) 	<ul style="list-style-type: none"> • as per Existing/Committed System • promotion/education and personal contact to reinforce direct cost incentive to composting option 	<ul style="list-style-type: none"> • as per Existing/Committed System • with extensive promotion/education and personal contact and with significant additional incentive provided by direct cost levy, backyard composting is a reliable method for increasing diversion of organics, though diversion of food waste remains limited
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effect noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effect noted

Direct Cost System, Reliability, Single Approach (cont'd)

Composting Facilities <ul style="list-style-type: none"> Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects identified 	<ul style="list-style-type: none"> as per Existing/Committed System no additional required 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects identified
Reuse Centres and Activities <ul style="list-style-type: none"> Municipal reuse centre Private reuse centre (e.g. Re-Use, Scarborough) Non-profit reuse centre (WASTEWISE, Halton) Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) Food reuse organization (such as Second Harvest) Special goods exchange days 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects identified 	<ul style="list-style-type: none"> as per Existing/Committed System no additional required 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects identified
MRFs <ul style="list-style-type: none"> Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. <i>Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables</i> 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects identified 	<ul style="list-style-type: none"> as per Existing/Committed System no additional required 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects identified

Direct Cost System, Reliability, Single Approach (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program on direct cost system</i> • <i>Promotion/education program on source reduction/pre-cycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified

TABLE P-1.3
RESIDENTIAL DIRECT COST SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Direct Cost
 CRITERIA GROUP: Service
 CRITERIA: Flexibility
 INDICATOR: Types and Range of Quantities of Wastes Accepted

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors • Self haul of waste to landfills and transfer stations by residents • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads • <i>Direct cost system for garbage collection</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System • quantities affected by residential waste collection will decrease due to levy on bags of garbage 	<ul style="list-style-type: none"> • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • positive effect through reduction of residential waste disposed • quantities affected by residential waste collection will decrease due to levy on bags of garbage

Direct Cost System, Flexibility, Types and Quantities (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • Expansion of curbside collection of Blue Box materials from single family dwellings in some municipalities to include all materials designated basic Blue Box waste and at least two materials designated as supplementary Blue Box waste in the 3Rs Regulations • Curbside collection of additional dry materials • Recycling services at all multi-family buildings with 6 or more units • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • as per Existing/Committed System • Direct Cost System likely to increase quantity of recyclables collected • may require modified routes/schedules or weekly recyclables collection 	<ul style="list-style-type: none"> • organize recycling collection for maximum efficiency including modified schedule, expanded collection fleets, modified collection systems • add materials to list of recyclables to take advantage of incentive and maximize diversion 	<ul style="list-style-type: none"> • Direct Cost System likely to increase quantities of recyclables collected • may require some modification to collection system to handle increased quantities and may provide opportunity to add materials
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites). 	<ul style="list-style-type: none"> • as per Existing/Committed System • Direct Cost System likely to increase quantity of leaf and yard waste collected • may require modified routes, schedules and services 	<ul style="list-style-type: none"> • prepare to revise collection schedules, or collection system if required 	<ul style="list-style-type: none"> • as per Existing/Committed System • Direct Cost System likely to increase quantity of leaf and yard waste collected • may require modified routes, schedules and services

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • Door to door distribution of backyard composters to 80% of single family households. • Large 3-bin composting units distributed to apartment and co-operative housing complexes • Promotion of vermicomposting to multi-family units • Promotion of community composting 	<ul style="list-style-type: none"> • as per Existing/Committed System • quantity of household wet waste managed by backyard composters likely to increase significantly, due to direct cost incentive as well as extensive distribution of composters • may have effect on amounts of waste (reduce or off-set increase) placed at curb • limited diversion of food (one of few methods for diversion of food), particularly due to multi-family buildings 	<ul style="list-style-type: none"> • personal contact, promotion/education to ensure proper use of units 	<ul style="list-style-type: none"> • with personal contact, diversion of organics through home composting would be maximized, due to direct cost incentive and extensive distribution of composters • may have effect on amounts of waste (reduce or off-set increase) placed at curb • limited diversion of food (one of few methods for diversion of food), particularly due to multi-family buildings
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing/Committed System • quantities diverted likely to increase due to Direct Cost System 	<ul style="list-style-type: none"> • as per Existing/Committed System • expand facilities, collection and markets as required 	<ul style="list-style-type: none"> • as per Existing/Committed System • quantities diverted likely to increase due to Direct Cost System
<p>Composting Facilities</p> <ul style="list-style-type: none"> • Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> • as per Existing/Committed System • quantities handled at composting facilities likely to increase 	<ul style="list-style-type: none"> • as per Existing/Committed System • update and expand existing facilities or build new facilities to accommodate increased amount of material 	<ul style="list-style-type: none"> • as per Existing/Committed System • quantities handled at composting facilities likely to increase, requiring additional capacity

Direct Cost System, Flexibility, Types and Quantities (cont'd)

<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> • Municipal reuse centre • Private reuse centre (e.g. Re-Uze, Scarborough) • Non-profit reuse centre (WASTEWISE, Halton) • Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) • Food reuse organization (such as Second Harvest) • Special goods exchange days 	<ul style="list-style-type: none"> • as per Existing/Committed System • quantities may increase 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • quantities may increase
<p>MRFs</p> <ul style="list-style-type: none"> • Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. • <i>Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables</i> 	<ul style="list-style-type: none"> • greater quantities of materials to be processed will result in higher load on existing facilities • potential for higher contamination due to poor source separation or "dumping" 	<ul style="list-style-type: none"> • increase efficiency of existing facilities and build new facilities as required to accommodate increased quantities of materials • encourage effective source separation by residents to contribute to efficiency • monitor source separation at depots and through curbside collection programs to minimize inefficiencies 	<ul style="list-style-type: none"> • quantities of materials processed likely would increase, with positive effect on diversion • contamination can be minimized with greater promotion/education and monitoring in collection system

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • as per Existing/Committed System • quantities of recyclables handled at depots likely to increase, particularly those serving single-family residents which do not receive any curbside service • community recycling centre and satellite depots possibly will realize increase also due to convenience • contamination may increase as residents try to dispose of more waste through "free" (indirect cost) services 	<ul style="list-style-type: none"> • as per Existing/Committed System • monitor materials received to minimize contamination 	<ul style="list-style-type: none"> • as per Existing/Committed System • quantities received may increase and monitoring/promotion/education can minimize contamination
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program on direct cost system</i> • <i>Promotion/education program on source reduction/pre-cycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System 	<ul style="list-style-type: none"> • as per Existing/Committed System 	<ul style="list-style-type: none"> • as per Existing/Committed System

TABLE P-1.3
RESIDENTIAL DIRECT COST SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Direct Cost
 CRITERIA GROUP: Service
 CRITERIA: Flexibility
 INDICATOR: Compatibility with Existing System

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors • Self haul of waste to landfills and transfer stations by residents • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads • <i>Direct cost system for garbage collection</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System • Direct Cost System compatible with Existing garbage collection system – pay-by-the-bag levy added to Existing infrastructure (there are various ways to implement, eg. stickers, special bags, etc.) • would require additional administration 	<ul style="list-style-type: none"> • as per Existing/Committed System • promotion/education required to make work well 	<ul style="list-style-type: none"> • as per Existing/Committed System • Direct Cost is compatible with Existing garbage collection system, requiring primarily additional administrative system • promotion and education will minimize problems with implementation

Direct Cost System, Flexibility, Compatibility (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • Expansion of curbside collection of Blue Box materials from single family dwellings in some municipalities to include all materials designated basic Blue Box waste and at least two materials designated as supplementary Blue Box waste in the 3Rs Regulations • Curbside collection of additional dry materials • Recycling services at all multi-family buildings with 6 or more units • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • as per Existing/Committed System • some expansion of collection systems may be required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no effects noted
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites). 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted

Direct Cost System, Flexibility, Compatibility (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • Door to door distribution of backyard composters to 80% of single family households. • Large 3-bin composting units distributed to apartment and co-operative housing complexes • Promotion of vermicomposting to multi-family units • Promotion of community composting 	<ul style="list-style-type: none"> • as per Existing/Committed System • extensive distribution of backyard composters require no significant changes to Existing System although requires additional administrative and significant promotion commitments 	<ul style="list-style-type: none"> • as per Existing/Committed System • promotion/education required • personal contact would maximize effective use 	<ul style="list-style-type: none"> • as per Existing/Committed System • extensive distribution of backyard composters require no significant changes to Existing System although requires additional administrative and significant promotion commitments
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted

Direct Cost System, Flexibility, Compatibility (cont'd)

<p>Composting Facilities</p> <ul style="list-style-type: none"> Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> as per Existing/Committed System may require new facilities or expansion of existing facilities 	<ul style="list-style-type: none"> as per Existing/Committed System monitor and adapt as required 	<ul style="list-style-type: none"> as per Existing/Committed System compatible with Existing System but may require modification/expansion to accommodate increased quantities of material
<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> Municipal reuse centre Private reuse centre (e.g. Re-Uze, Scarborough) Non-profit reuse centre (WASTEWISE, Halton) Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) Food reuse organization (such as Second Harvest) Special goods exchange days 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects identified 	<ul style="list-style-type: none"> as per Existing/Committed System no additional required 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects identified
<p>MRFs</p> <ul style="list-style-type: none"> Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. <i>Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables</i> 	<ul style="list-style-type: none"> as per Existing/Committed System expected to place higher load on existing facilities but same systems used 	<ul style="list-style-type: none"> as per Existing/Committed System expand or adapt facilities as required 	<ul style="list-style-type: none"> as per Existing/Committed System expected to place higher load on existing facilities but same systems used

Direct Cost System, Flexibility, Compatibility (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program on direct cost system</i> • <i>Promotion/education program on source reduction/pre-cycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified

TABLE P-1.3
RESIDENTIAL DIRECT COST SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM:	<u>Direct Cost</u>
CRITERIA GROUP:	<u>Service</u>
CRITERIA:	<u>Performance</u>
INDICATOR:	<u>Quantity Diverted or Requiring Landfilling</u>

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors • Self haul of waste to landfills and transfer stations by residents • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads • <i>Direct cost system for garbage collection</i> 	<ul style="list-style-type: none"> • Direct Cost System expected to decrease waste sent for disposal by between 8% to 13% from Existing/Committed System. 54% to 71% of waste stream disposed at landfill • additional source reduction may occur due to Direct Cost System but has not been quantified due to limited availability of reliable/appropriate data • illegal dumping of wastes may increase 	<ul style="list-style-type: none"> • promotion/education and monitoring to minimize illegal dumping and to raise awareness of diversion opportunities 	<ul style="list-style-type: none"> • Direct Cost System expected to decrease waste disposed through diversion by at least 8% to 13% and possibly more as a result of source reduction. 54% to 71% of waste stream disposed at landfill

Direct Cost System, Performance, Quantities (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • Expansion of curbside collection of Blue Box materials from single family dwellings in some municipalities to include all materials designated basic Blue Box waste and at least two materials designated as supplementary Blue Box waste in the 3Rs Regulations • Curbside collection of additional dry materials • Recycling services at all multi-family buildings with 6 or more units • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • an estimated 17% to 28% diversion achieved through residential curbside and multi-family collection programs 	<ul style="list-style-type: none"> • may require modified schedules and routes or increased frequency of collection 	<ul style="list-style-type: none"> • an estimated 17% to 28% diversion achieved through residential curbside and multi-family collection programs
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites). 	<ul style="list-style-type: none"> • an estimated diversion of 7%-10% of residential waste stream (possibly higher depending on backyard composter participation) 	<ul style="list-style-type: none"> • as per Existing/Committed System • modified schedules and routes or increased collection frequency may be required 	<ul style="list-style-type: none"> • an estimated diversion of 7%-10% of residential waste stream (possibly higher depending on backyard composter participation)

Direct Cost System, Performance, Quantities (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • Door to door distribution of backyard composters to 80% of single family households. • Large 3-bin composting units distributed to apartment and co-operative housing complexes • Promotion of vermicomposting to multi-family units • Promotion of community composting 	<ul style="list-style-type: none"> • as per Existing/Committed System • an estimated diversion of between 6% and 11% achievable through backyard composting 	<ul style="list-style-type: none"> • promotion/education and personal contact may enhance performance 	<ul style="list-style-type: none"> • as per Existing/Committed System • an estimated diversion of between 6% and 11% achievable through backyard composting
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • likely increase in use of facilities 	<ul style="list-style-type: none"> • none required 	<ul style="list-style-type: none"> • increased usage likely due to Direct Cost incentive

Direct Cost System, Performance, Quantities (cont'd)

Composting Facilities <ul style="list-style-type: none"> Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> as per Existing/Committed System contributes to processing for 7%-10% of residential waste stream 	<ul style="list-style-type: none"> as per Existing/Committed System some expansion may be necessary to handle increased quantities 	<ul style="list-style-type: none"> as per Existing/Committed System contributes to processing for 7%-10% of residential waste stream
Reuse Centres and Activities <ul style="list-style-type: none"> Municipal reuse centre Private reuse centre (e.g. Re-Uze, Scarborough) Non-profit reuse centre (WASTEWISE, Halton) Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) Food reuse organization (such as Second Harvest) Special goods exchange days 	<ul style="list-style-type: none"> as per Existing/Committed System usage may increase 	<ul style="list-style-type: none"> as per Existing/Committed System promotion/education to revise awareness of diversion opportunities 	<ul style="list-style-type: none"> as per Existing/Committed System usage may increase
MRFs <ul style="list-style-type: none"> Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. <i>Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables</i> 	<ul style="list-style-type: none"> possible increase in residuals due to material contamination contributes to processing of 17%-24% of residential waste stream 	<ul style="list-style-type: none"> expand markets as required promotion/education and monitoring to ensure good separation of materials at plant and by residents 	<ul style="list-style-type: none"> contributes to processing of 17%-24% of residential waste stream with promotion/education/monitoring contamination can be minimized

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • an estimated diversion of 1% to 4% of residential waste stream but may be higher due to increased incentive 	<ul style="list-style-type: none"> • promotion/education of diversion opportunities at depots 	<ul style="list-style-type: none"> • an estimated diversion of 1% to 4% of residential waste stream but may be higher due to increased incentive
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program on direct cost system</i> • <i>Promotion/education program on source reduction/pre-cycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • additional promotion/education key component to complement direct cost incentive and maximize diversion • diversion attributable to promotion/education difficult to quantify 	<ul style="list-style-type: none"> • none required 	<ul style="list-style-type: none"> • additional promotion/education key component to complement direct cost incentive and maximize diversion • diversion attributable to promotion/education difficult to quantify

TABLE P-1.4
RESIDENTIAL EXPANDED BLUE BOX SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM:	<u>Expanded Blue Box</u>
CRITERIA GROUP:	<u>Service</u>
CRITERIA:	<u>Reliability</u>
INDICATOR:	<u>Proven Technologies Based on Experience in Other Jurisdictions</u>

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors • Self haul of waste to landfills and transfer stations by residents • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effect noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effect noted

Expanded Blue Box System, Reliability, Proven Technology (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • <i>Curbside collection of Expanded Blue Box materials including plastics, (PET, rigid plastic, bottles & tubes, film plastic, foam plastic and rigid trays); paper fibre (ONP, OCC, boxboard, polycoat, phone books, magazines and catalogues and mixed household paper); metal (steel and aluminum cans, aluminum trays and foil), clear and coloured glass and textiles</i> • <i>Recycling services for full range of Expanded Blue Box materials at all multi-family buildings with 6 or more units</i> • <i>Collection of bins of recyclables (collecting all Expanded Blue Box materials) from multi-family units</i> 	<ul style="list-style-type: none"> • proven technology contributing to increased waste diversion demonstrated at Quinte, Edmonton, Burnaby, Bluewater, and Seattle 	<ul style="list-style-type: none"> • strong promotion/education program required 	<ul style="list-style-type: none"> • proven technology contributing to increased waste diversion demonstrated at Quinte, Edmonton, Burnaby, Bluewater, and Seattle
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Expanded Blue Box System, Reliability, Proven Technology (cont'd)

<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> Seasonal curbside collection of leaf and yard waste Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> as per Existing Committed System no additional effects noted 	<ul style="list-style-type: none"> no additional required 	<ul style="list-style-type: none"> as per Existing Committed System no additional effects noted
<p>Residential Household Composting</p> <ul style="list-style-type: none"> <i>Door to door distribution of backyard composters to 80% of single family households</i> <i>Large 3-bin composting units distributed to apartment and co-operative housing complexes</i> <i>Promotion of vermicomposting to multi-family units</i> <i>Promotion of community composting</i> 	<ul style="list-style-type: none"> as per Existing System high distribution of composters proven to contribute to increased waste diversion (e.g. Centre South Hastings), however some residents with composters do not use them effectively 	<ul style="list-style-type: none"> increased promotion/ education, door-to-door bin distribution with personal contact etc. provide new types of bins and bins to apartment and co-operative housing 	<ul style="list-style-type: none"> significantly increased diversion through extensive backyard composter distribution with strong education/promotion program involving maximum personal contact

Expanded Blue Box System, Reliability, Proven Technology (cont'd)

<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing/Committed System • additional promotion/education on Expanded Blue Box may affect diversion through other programs positively 	<ul style="list-style-type: none"> • promotion/education campaign 	<ul style="list-style-type: none"> • as per Existing/Committed System • additional promotion/education on Expanded Blue Box may affect positively other programs
<p>Composting Facilities</p> <ul style="list-style-type: none"> • Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> • no additional effects noted 	<ul style="list-style-type: none"> • no additional required 	<ul style="list-style-type: none"> • no additional effects noted

Expanded Blue Box System, Reliability, Proven Technology (cont'd)

<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> • Municipal reuse centre • Private reuse centre (e.g. Re-Uze, Scarborough) • Non-profit reuse centre (WASTEWISE, Halton) • Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) • Food reuse organization (such as Second Harvest) • Special goods exchange days 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified
<p>MRFs</p> <ul style="list-style-type: none"> • Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. • <i>Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System • requires modified operations at MRFs to handle expanded list and quantities of materials 	<ul style="list-style-type: none"> • expand or improve efficiency as required • add staff if necessary 	<ul style="list-style-type: none"> • as per Existing/Committed System • requires modified operations at MRFs to handle expanded list and quantities of materials

Expanded Blue Box System, Reliability, Proven Technology (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots (<i>collecting all Expanded Blue Box materials</i>) for multi-family residents not serviced by recycling • Drop-off depots (<i>collecting all Expanded Blue Box materials</i>) for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • as per Existing/Committed System • may require modification to operation or expansion of facilities 	<ul style="list-style-type: none"> • optimize depot operations and capacity 	<ul style="list-style-type: none"> • as per Existing/Committed System • may require modification to operation or expansion of facilities
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program on Expanded Blue Box program</i> • <i>Promotion/education program on source reduction, pre-cycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • extensive promotion/education proven to be effective in contributing to success of expanded collection programs (e.g. Quinte) 	<ul style="list-style-type: none"> • promotion/education with on-going diversified campaign 	<ul style="list-style-type: none"> • extensive promotion/education proven to be effective in contributing to success of expanded collection programs (e.g. Quinte) • positive effect through increased participation in all aspects of waste diversion

TABLE P-1.4
RESIDENTIAL EXPANDED BLUE BOX SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Expanded Blue Box
CRITERIA GROUP: Service
CRITERIA: Reliability
INDICATOR: Degree of Reliance on Single Approach

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors • Self haul of waste to landfills and transfer stations by residents • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified

Expanded Blue Box System, Reliability, Single Approach (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • <i>Curbside collection of Expanded Blue Box materials including plastics, (PET, rigid plastic, bottles & tubes, film plastic, foam plastic and rigid trays); paper fibre (ONP, OCC, boxboard, polycoat, phone books, magazines and catalogues and mixed household paper); metal (steel and aluminum cans, aluminum trays and foil), clear and coloured glass and textiles</i> • <i>Recycling services for full range of Expanded Blue Box materials at all multi-family buildings with 6 or more units</i> • <i>Collection of bins of recyclables (collecting all Expanded Blue Box materials) from multi-family units</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System • relies on expansion of list of materials collected to increase diversion • relies on willingness of residents to participate • collection systems may be developed to suit the specific needs of the Region 	<ul style="list-style-type: none"> • extensive promotion/education to ensure residents aware of what materials collected and to encourage participation 	<ul style="list-style-type: none"> • expanding list of materials collected increases diversion if promotion/education effectively raises awareness and encourages participation
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Expanded Blue Box System, Reliability, Single Approach (cont'd)

<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> Seasonal curbside collection of leaf and yard waste Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects identified 	<ul style="list-style-type: none"> as per Existing/Committed System no additional required 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects identified
<p>Residential Household Composting</p> <ul style="list-style-type: none"> <i>Door to door distribution of backyard composters to 80% of single family households</i> <i>Large 3-bin composting units distributed to apartment and co-operative housing complexes</i> <i>Promotion of vermicomposting to multi-family units</i> <i>Promotion of community composting</i> 	<ul style="list-style-type: none"> as per Existing/Committed System reliance on extensive distribution and willingness of residents to use composters to increase diversion of organics home composting may be limited for diversion of food waste (largely due to multi-family buildings) as individual units, composters enhance reliability since some residents will be able to divert waste even when others not participating 	<ul style="list-style-type: none"> as per Existing/Committed System ensure offer bin types that meet residents needs ensure extensive promotion/education (including personal contact) on effective use 	<ul style="list-style-type: none"> as per Existing/Committed System with extensive promotion/education and personal contact, extensive distribution of composters is a reliable method to increase diversion of organics but still limited for diversion of food waste

Expanded Blue Box System, Reliability, Single Approach (cont'd)

<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified
<p>Composting Facilities</p> <ul style="list-style-type: none"> • Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified

<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> • Municipal reuse centre • Private reuse centre (e.g. Re-Uze, Scarborough) • Non-profit reuse centre (WASTEWISE, Halton) • Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) • Food reuse organization (such as Second Harvest) • Special goods exchange days 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified
<p>MRFs</p> <ul style="list-style-type: none"> • Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. • <i>Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System relies on MRFs for processing dry recyclables • a number of sorting arrangements may be considered including increased separation at trucks or use other local MRFs as required 	<ul style="list-style-type: none"> • design collection system to best meet MRF needs • promotion/education to support collection system and processing system • make arrangements with other (neighbouring) facilities for contingency/event of failure 	<ul style="list-style-type: none"> • system relies on MRFs for processing dry recyclables, however a number of collection and sorting arrangements could be considered as well as promotion/education to enhance reliability

Expanded Blue Box System, Reliability, Single Approach (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots (<i>collecting all Expanded Blue Box materials</i>) for multi-family residents not serviced by recycling • Drop-off depots (<i>collecting all Expanded Blue Box materials</i>) for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program on Expanded Blue Box program</i> • <i>Promotion/education program on source reduction, pre-cycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System • system relies very significantly on promotion/education to support participation in extensive source separation • variety of approaches available 	<ul style="list-style-type: none"> • utilize diverse approaches for promotion/education campaigns to reach widest audience 	<ul style="list-style-type: none"> • system relies very significantly on promotion/education to support participation in extensive source separation • variety of approaches available

TABLE P-1.4
RESIDENTIAL EXPANDED BLUE BOX SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Expanded Blue Box
CRITERIA GROUP: Service
CRITERIA: Flexibility
INDICATOR: Compatibility with Existing System

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors • Self haul of waste to landfills and transfer stations by residents • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted

Expanded Blue Box System, Flexibility, Compatibility (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • <i>Curbside collection of Expanded Blue Box materials including plastics, (PET, rigid plastic, bottles & tubes, film plastic, foam plastic and rigid trays); paper fibre (ONP, OCC, boxboard, polycoat, phone books, magazines and catalogues and mixed household paper); metal (steel and aluminum cans, aluminum trays and foil), clear and coloured glass and textiles</i> • <i>Recycling services for full range of Expanded Blue Box materials at all multi-family buildings with 6 or more units</i> • <i>Collection of bins of recyclables (collecting all Expanded Blue Box materials) from multi-family units</i> 	<ul style="list-style-type: none"> • may require adaptation of existing collection vehicles or schedules • builds on behaviour/practices of residents in Existing System 	<ul style="list-style-type: none"> • promotion/education regarding source separation of expanded list of materials 	<ul style="list-style-type: none"> • builds on behaviour and practices of residents in Existing System but may require modified collection system/schedules
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Expanded Blue Box System, Flexibility, Compatibility (cont'd)

<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> Seasonal curbside collection of leaf and yard waste Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects noted 	<ul style="list-style-type: none"> as per Existing/Committed System no additional required 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects noted
<p>Residential Household Composting</p> <ul style="list-style-type: none"> <i>Door to door distribution of backyard composters to 80% of single family households</i> <i>Large 3-bin composting units distributed to apartment and co-operative housing complexes</i> <i>Promotion of vermicomposting to multi-family units</i> <i>Promotion of community composting</i> 	<ul style="list-style-type: none"> as per Existing/Committed System extensive distribution of backyard composters requires no significant changes to Existing System although requires additional administrative and significant on-going promotion commitments 	<ul style="list-style-type: none"> as per Existing/Committed System promotion/education required personal contact would maximize effective use 	<ul style="list-style-type: none"> as per Existing/Committed System extensive distribution of backyard composters requires no significant changes to Existing System although requires additional administrative and significant on-going promotion commitments

Expanded Blue Box System, Flexibility, Compatibility (cont'd)

<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • compatible with existing system 	<ul style="list-style-type: none"> • none required 	<ul style="list-style-type: none"> • compatible with existing system
<p>Composting Facilities</p> <ul style="list-style-type: none"> • Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> • compatible with existing system 	<ul style="list-style-type: none"> • none required 	<ul style="list-style-type: none"> • compatible with existing system

Expanded Blue Box System, Flexibility, Compatibility (cont'd)

<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> • Municipal reuse centre • Private reuse centre (e.g. Re-Uze, Scarborough) • Non-profit reuse centre (WASTEWISE, Halton) • Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) • Food reuse organization (such as Second Harvest) • Special goods exchange days 	<ul style="list-style-type: none"> • no effects identified, compatible with existing system 	<ul style="list-style-type: none"> • none required 	<ul style="list-style-type: none"> • no effects identified
<p>MRFs</p> <ul style="list-style-type: none"> • Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. • <i>Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables</i> 	<ul style="list-style-type: none"> • requires expansion/modification of MRFs to handle greater range and quantities of materials 	<ul style="list-style-type: none"> • identify processing requirements • expand/modify existing MRF as required 	<ul style="list-style-type: none"> • requires expansion/modification of MRFs to handle greater range and quantities of materials

Expanded Blue Box System, Flexibility, Compatibility (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots (<i>collecting all Expanded Blue Box materials</i>) for multi-family residents not serviced by recycling • Drop-off depots (<i>collecting all Expanded Blue Box materials</i>) for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • may required expansion modification to depots to handle wide range and greater quantities of materials • depots would operate in same way as Existing and Committed depots 	<ul style="list-style-type: none"> • adapt as required to accept wider range of dry materials 	<ul style="list-style-type: none"> • depots would operate in similar way as Existing and Committed System to collect expanded range and quantity of materials
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program on Expanded Blue Box program</i> • <i>Promotion/education program on source reduction, pre-cycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • existing promotion/education are needed and would be modified to highlight new materials and aspects of program, but these do not require significant changes to system structure 	<ul style="list-style-type: none"> • modified/expanded promotion/education program essential to address wider range of materials included in recycling program 	<ul style="list-style-type: none"> • existing promotion/education are needed and would be modified to highlight new materials and aspects of program, but these do not require significant changes to system structure

TABLE P-1.4
RESIDENTIAL EXPANDED BLUE BOX SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Expanded Blue Box
CRITERIA GROUP: Service
CRITERIA: Flexibility
INDICATOR: Types and Range of Quantities of Waste Accepted

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors • Self haul of waste to landfills and transfer stations by residents • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted

Expanded Blue Box System, Flexibility, Types and Quantities (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • <i>Curbside collection of Expanded Blue Box materials including plastics, (PET, rigid plastic, bottles & tubes, film plastic, foam plastic and rigid trays); paper fibre (ONP, OCC, boxboard, polycoat, phone books, magazines and catalogues and mixed household paper); metal (steel and aluminum cans, aluminum trays and foil), clear and coloured glass and textiles</i> • <i>Recycling services for full range of Expanded Blue Box materials at all multi-family buildings with 6 or more units</i> • <i>Collection of bins of recyclables (collecting all Expanded Blue Box materials) from multi-family units</i> 	<ul style="list-style-type: none"> • positive effect by increasing opportunities for waste diversion available to residents by acceptance of wide range of materials • likely to result in required expansion or modification of collection system to accommodate greater range and increased quantities of materials 	<ul style="list-style-type: none"> • direct promotion/education campaign at proper source separation techniques • modify collection program to support needs of both residents and MRFs. 	<ul style="list-style-type: none"> • flexibility enhanced by collecting wide range of materials and increased quantities • expansion/modification of collection system required
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Expanded Blue Box System, Flexibility, Types and Quantities (cont'd)

<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> Seasonal curbside collection of leaf and yard waste Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects noted 	<ul style="list-style-type: none"> as per Existing/Committed System no additional required 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects noted
<p>Residential Household Composting</p> <ul style="list-style-type: none"> <i>Door to door distribution of backyard composters to 80% of single family households</i> <i>Large 3-bin composting units distributed to apartment and co-operative housing complexes</i> <i>Promotion of vermicomposting to multi-family units</i> <i>Promotion of community composting</i> 	<ul style="list-style-type: none"> as per Existing/Committed System quantity of household wet waste managed by backyard composters likely will increase significantly due to wide distribution diversion of food waste limited (largely due to number of multi-family buildings) 	<ul style="list-style-type: none"> as per Existing/Committed System personal contact, promotion and education to ensure proper use of units and encourage participation 	<ul style="list-style-type: none"> as per Existing/Committed System quantity of household wet waste managed by backyard composters likely will increase significantly due to wide distribution diversion of food waste limited (largely due to number of multi-family buildings)

Expanded Blue Box System, Flexibility, Types and Quantities (cont'd)

<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted
<p>Composting Facilities</p> <ul style="list-style-type: none"> • Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted

Expanded Blue Box System, Flexibility, Types and Quantities (cont'd)

<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> • Municipal reuse centre • Private reuse centre (e.g. Re-Uze, Scarborough) • Non-profit reuse centre (WASTEWISE, Halton) • Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) • Food reuse organization (such as Second Harvest) • Special goods exchange days 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted
<p>MRFs</p> <ul style="list-style-type: none"> • Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. • <i>Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables</i> 	<ul style="list-style-type: none"> • increased quantities of materials and wider range of materials processed • will require expansion/modification to existing facilities and possibly new facilities to handle increase in load 	<ul style="list-style-type: none"> • expand/modify facilities to accommodate wider range of materials 	<ul style="list-style-type: none"> • increased quantities and range of materials processed, requiring expanded/modified processing facilities

Expanded Blue Box System, Flexibility, Types and Quantities (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots (<i>collecting all Expanded Blue Box materials</i>) for multi-family residents not serviced by recycling • Drop-off depots (<i>collecting all Expanded Blue Box materials</i>) for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • as per Existing/Committed System • increased range and quantities of materials accepted in expanded program requiring expanded/modified facilities • depots and community recycling centres well-suited to adjust to increased range and quantities of materials 	<ul style="list-style-type: none"> • as per Existing/Committed System • may require revised set-up of depots including signage and bins • promotion/education to encourage delivery of expanded range of materials 	<ul style="list-style-type: none"> • as per Existing/Committed System • increased quantities of materials expected to be diverted through depots
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program on Expanded Blue Box program</i> • <i>Promotion/education program on source reduction, pre-cycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • extensive promotion and education needed explain new range of materials collected 	<ul style="list-style-type: none"> • review and expand promotion and education programs 	<ul style="list-style-type: none"> • result in increased quantities and higher quality of recyclables in expanded program

TABLE P-1.4
RESIDENTIAL EXPANDED BLUE BOX SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Expanded Blue Box
 CRITERIA GROUP: Service
 CRITERIA: Performance
 INDICATOR: Quantity Diverted or Requiring Landfilling

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors • Self haul of waste to landfills and transfer stations by residents • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • disposal of residential waste estimated to decrease by between 12% and 14% from Existing/Committed System • 53% to 67% of waste stream disposed at landfill 	<ul style="list-style-type: none"> • no additional required 	<ul style="list-style-type: none"> • disposal of residential waste estimated to decrease by between 12% and 14% from Existing/Committed System • 53% to 67% of waste stream disposed at landfill

Expanded Blue Box System, Performance, Quantities (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • <i>Curbside collection of Expanded Blue Box materials including plastics, (PET, rigid plastic, bottles & tubes, film plastic, foam plastic and rigid trays); paper fibre (ONP, OCC, boxboard, polycoat, phone books, magazines and catalogues and mixed household paper); metal (steel and aluminum cans, aluminum trays and foil), clear and coloured glass and textiles</i> • <i>Recycling services for full range of Expanded Blue Box materials at all multi-family buildings with 6 or more units</i> • <i>Collection of bins of recyclables (collecting all Expanded Blue Box materials) from multi-family units</i> 	<ul style="list-style-type: none"> • potential to divert an estimated 20%-24% of residential waste stream through residential curbside depots and multi-family expanded collection programs 	<ul style="list-style-type: none"> • may require modified schedules and routes or increased frequency of collection 	<ul style="list-style-type: none"> • potential to divert an estimated 20%-24% of residential waste stream through residential curbside depots and multi-family expanded collection programs
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Expanded Blue Box System, Performance, Quantities (cont'd)

<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> Seasonal curbside collection of leaf and yard waste Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> an estimated diversion of 6% to 9% of residential waste stream (possibly higher depending on backyard composter participation) 	<ul style="list-style-type: none"> modified schedules and routes or increased collection frequency may be required 	<ul style="list-style-type: none"> an estimated diversion of 6% to 9% of residential waste stream (possibility higher depending on backyard composter participation)
<p>Residential Household Composting</p> <ul style="list-style-type: none"> <i>Door to door distribution of backyard composters to 80% of single family households</i> <i>Large 3-bin composting units distributed to apartment and co-operative housing complexes</i> <i>Promotion of vermicomposting to multi-family units</i> <i>Promotion of community composting</i> 	<ul style="list-style-type: none"> an estimated diversion of between 6% and 10% of residential waste stream achievable through backyard composting limited diversion of food waste, 17% of food waste from all approaches 	<ul style="list-style-type: none"> promotion/education and personal contact enhance performance 	<ul style="list-style-type: none"> an estimated diversion of between 6% and 10% of residential waste stream achievable through backyard composting limited diversion of food waste, 17% of food waste from all approaches

Expanded Blue Box System, Performance, Quantities (cont'd)

<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods Collection, White Goods Drop-Off etc.).</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified
<p>Composting Facilities</p> <ul style="list-style-type: none"> • Centralized windrow composting of leaf and yard waste 	<ul style="list-style-type: none"> • as per Existing/Committed System • contributes to processing of 6%-9% of residential waste stream 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • contributes to processing of 6%-9% of residential waste stream

Expanded Blue Box System, Performance, Quantities (cont'd)

<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> • Municipal reuse centre • Private reuse centre (e.g. Re-Uze, Scarborough) • Non-profit reuse centre (WASTEWISE, Halton) • Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) • Food reuse organization (such as Second Harvest) • Special goods exchange days 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified
<p>MRFs</p> <ul style="list-style-type: none"> • Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. • <i>Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables</i> 	<ul style="list-style-type: none"> • contributes to diversion by processing of 21% to 27% of residential waste stream 	<ul style="list-style-type: none"> • improve efficiency and facility design to accommodate increased types and quantities of materials • promotion/education and monitoring to ensure good separation of materials at plant and by residents • identify new markets for expanded range of materials 	<ul style="list-style-type: none"> • contributes to diversion by processing of 21% to 27% of residential waste stream

Expanded Blue Box System, Performance, Quantities (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots (<i>collecting all Expanded Blue Box materials</i>) for multi-family residents not serviced by recycling • Drop-off depots (<i>collecting all Expanded Blue Box materials</i>) for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • quantities received may increase • potential to divert 1% to 4% of residential waste stream, but may be higher due to increased range of materials accepted 	<ul style="list-style-type: none"> • promotion/education of diversion opportunities at depots • may require additional capacity, retrofits, expansion or revised schedules 	<ul style="list-style-type: none"> • quantities received may increase • potential to divert 1% to 4% of residential waste stream, but may be higher due to increased range of materials accepted
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program on Expanded Blue Box program</i> • <i>Promotion/education program on source reduction, pre-cycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • additional promotion/education key to maximizing diversion in Expanded Blue Box System • diversion attributable to promotion/education difficult to quantify 	<ul style="list-style-type: none"> • none required 	<ul style="list-style-type: none"> • additional promotion/education key to maximizing diversion in Expanded Blue Box System • diversion attributable to promotion/education difficult to quantify

TABLE P-1.5
RESIDENTIAL WET/DRY SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM:	<u>Wet/Dry</u>
CRITERIA GROUP:	<u>Service</u>
CRITERIA:	<u>Reliability</u>
INDICATOR:	<u>Proven Technologies Based on Experience in Other Jurisdictions</u>

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • <i>Curbside collection of residential waste from single family dwellings in three streams by specially designed trucks by municipal forces or contractors to municipalities</i> • <i>Collection of residential garbage from multi-family units in three streams by municipal forces or private contractors, where feasible</i> • <i>Regional recycling legislation (e.g. collection ban on grass clippings, Oakville)</i> • <i>Self haul of waste to landfills and transfer stations by residents</i> • <i>Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads</i> 	<ul style="list-style-type: none"> • 3-stream Wet/Dry Collection proven technology in European cities • has had mixed success in Ontario at pilot scale • proposed City of Guelph system will provide data on 2-stream (when implemented) • new collection system required for collection of garbage in 3-stream – various systems can be considered • specially designed trucks required • provide carts as required for waste collection 	<ul style="list-style-type: none"> • extensive on-going promotion/education program designed to describe wet/dry system to householder 	<ul style="list-style-type: none"> • 3-stream Wet/Dry (including garbage stream) proven technology through limited experience in North American context (pilots and small programs only)

Wet/Dry System, Reliability, Proven Technology (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • <i>Provide carts to all single family households and some "other" households</i> • <i>Separation of waste into three streams (wet, dry, and garbage) by the householder</i> • <i>Expanded set of dry materials to be collected, including plastics, (PET, rigid plastic, bottles & tubes, film plastic, foam plastic and rigid trays); paper fibre (ONP, OCC, boxboard, polycoat, phone books, magazines and catalogues and mixed household paper); metal (steel and aluminum cans, aluminum trays and foil), clear and coloured glass and textiles</i> • <i>Recycling services at all multi-family buildings with 6 or more units (3R's Regulations)</i> • <i>Large bins provided in the garbage management area of multi-family buildings, where space permits Residents will be encouraged to separate their waste into three separate bags</i> 	<ul style="list-style-type: none"> • demonstrated contribution to significant diversion of dry recyclables • demonstrated diversion of household organics in 3-stream system • carts, blue boxes or special bags used for material source separation by residents (Halton, Mississauga, Guelph) • various collection schedules/configurations possible in 3-stream system • some contamination of recyclables and organics experienced • low participation in some pilot programs caused low diversion 	<ul style="list-style-type: none"> • extensive, on-going promotion/education required to ensure residents participate effectively 	<ul style="list-style-type: none"> • demonstrated contribution to significant diversion of dry recyclables, though in North American context, only in pilot projects and small programs • low participation in some projects resulted in lower then potential diversion
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • <i>Collection of leaf and yard waste as part of three stream pick-up</i> • <i>Separate brush collection</i> • <i>Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites)</i> 	<ul style="list-style-type: none"> • demonstrated contribution to significant diversion of leaf and yard waste collection in pilots and small programs, and in Europe • various collection schedules configurations possible • some contamination of organics experienced 	<ul style="list-style-type: none"> • extensive, on-going promotion education required to ensure residents participate effectively 	<ul style="list-style-type: none"> • demonstrated contribution to significant diversion of organics, though in North American context, only in pilot projects and small programs • low participation in some projects resulted in lower then potential diversion

Wet/Dry System, Reliability, Proven Technology (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • <i>Door to door distribution of backyard composters to 80% of single family households</i> • <i>Large 3-bin composting units distributed to apartment and co-operative housing complexes</i> • <i>Promotion of vermicomposting to multi-family units</i> • <i>Promotion of community composting</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System • extensive distribution and promotion of home composters effective for diversion of organics in some jurisdictions though some residents did not use them • reduces amount of organics collected at curb 	<ul style="list-style-type: none"> • as per Existing/Committed System • extensive promotion/education and personal contact to encourage effective use of composters even with curbside collection of organics 	<ul style="list-style-type: none"> • as per Existing/Committed System • extensive distribution and promotion of home composters effective for diversion of organics in some jurisdictions though some residents did not use them • reduces amount of organics collected at curb
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods, etc.)</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified

Wet/Dry System, Reliability, Proven Technology (cont'd)

<p>Composting Facilities</p> <ul style="list-style-type: none"> Existing centralized windrow leaf and yard waste composting facilities may be closed <i>Central composting facilities (in vessel or windrow) for composting of source separated household organics (wet stream) and leaf and yard waste</i> 	<ul style="list-style-type: none"> in-vessel composting proven technology for processing food, leaf and yard waste and diverting these from disposal windrow processing of leaf and yard waste proven to handle to divert organic wastes some operational problems have been experienced e.g. odour, compost quality 	<ul style="list-style-type: none"> use state-of-the-art technology and management practices and ensure careful process control for all facilities strong promotion/education to encourage effective source separation and minimize contamination 	<ul style="list-style-type: none"> with effective process control and management, in-vessel composting proven to be reliable in processing food leaf and yard waste. Most operational problems can be mitigated effective source separation maximizes diversion as product compost quality is maximized
<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> Municipal reuse centre Private reuse centre (e.g. Re-Uze, Scarborough). Non-profit reuse centre (WASTEWISE, Halton). Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.). Food reuse organization (such as Second Harvest). Special goods exchange days 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects identified 	<ul style="list-style-type: none"> as per Existing/Committed System no additional required 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects identified
<p>MRFs</p> <ul style="list-style-type: none"> Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. <i>Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables</i> 	<ul style="list-style-type: none"> as per Expanded Blue Box System contamination may be greater modified systems may be required for compatibility with collection system 	<ul style="list-style-type: none"> strong promotion/education to ensure minimum contamination of dry stream design MRFs to work in conjunction with collection system 	<ul style="list-style-type: none"> as per Expanded Blue Box System contamination may be greater modified systems may be required for compatibility with collection system

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots <i>located at compost facility</i> to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program for wet/dry system</i> • <i>Promotion/education program for source reduction, precycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • significant promotion/education critical to establishment of effective 3-stream system 	<ul style="list-style-type: none"> • none noted 	<ul style="list-style-type: none"> • significant promotion/education critical to establishment of effective 3-stream system

TABLE P-1.5
RESIDENTIAL WET/DRY SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Wet/Dry
 CRITERIA GROUP: Service
 CRITERIA: Reliability
 INDICATOR: Degree of Reliance on Single Approach

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • <i>Curbside collection of residential waste from single family dwellings in three streams by specially designed trucks by municipal forces or contractors to municipalities</i> • <i>Collection of residential garbage from multi-family units in three streams by municipal forces or private contractors, where feasible</i> • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Self haul of waste to landfills and transfer stations by residents • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • garbage collection linked to other components of waste collection system increasing potential negative effects in event of failure • potential for contamination of recyclables in collection system 	<ul style="list-style-type: none"> • strong promotion/education to ensure correct separation and success of system • spare capacity for collection system • on-going development of technologies for effective and efficient collection for Wet/Dry System 	<ul style="list-style-type: none"> • garbage system linked to other components of waste collection system but problems and potential for failure can be minimized by strong promotion/education and good management

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • <i>Provide carts to all single family households and some "other" households</i> • <i>Separation of waste into three streams (wet, dry, and garbage) by the householder</i> • <i>Expanded set of dry materials to be collected, including plastics, (PET, rigid plastic, bottles & tubes, film plastic, foam plastic and rigid trays); paper fibre (ONP, OCC, boxboard, polycoat, phone books, magazines and catalogues and mixed household paper); metal (steel and aluminum cans, aluminum trays and foil), clear and coloured glass and textiles</i> • <i>Recycling services at all multi-family buildings with 6 or more units (3R's Regulations)</i> • <i>Large bins provided in the garbage management area of multi-family buildings, where space permits Residents will be encouraged to separate their waste into three separate bags</i> 	<ul style="list-style-type: none"> • collection system for dry recyclables and for household organics linked to garbage collection increasing potential negative effects in event of failure • potential for contamination of both dry recyclables and household organics • provides significant alternative approach for food waste diversion • still relies on willingness of residents to participate 	<ul style="list-style-type: none"> • strong promotion/education to ensure effective source separation and set-out • maintain alternative approaches to curbside collection of waste • spare capacity for collection system • on-going development of technologies for effective and efficient collection in Wet/Dry System 	<ul style="list-style-type: none"> • collection system for dry recyclables and for household organics linked to garbage collection increasing potential negative effects in event of failure • potential for contamination of both dry recyclables and household organics • provides significant alternative approach for food waste diversion • still relies on willingness of residents to participate
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • <i>Collection of leaf and yard waste as part of three stream pick-up</i> • <i>Separate brush collection</i> • <i>Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites)</i> 	<ul style="list-style-type: none"> • as per recycling and garbage components • alternative for leaf and yard waste with separate brush collection • still relies on willingness of residents to participate 	<ul style="list-style-type: none"> • maintain alternative approaches - separate brush collection as well as backyard and on-site composting • strong promotion/education to ensure effective source separation and set-out 	<ul style="list-style-type: none"> • as per recycling and garbage components • alternative for leaf and yard waste with separate brush collection • still relies on willingness of residents to participate • strong promotion/education will encourage participation

Wet/Dry System, Reliability, Single Approach (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • <i>Door to door distribution of backyard composters to 80% of single family households</i> • <i>Large 3-bin composting units distributed to apartment and co-operative housing complexes</i> • <i>Promotion of vermicomposting to multi-family units</i> • <i>Promotion of community composting</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System • value as back up and alternative for organics diversion • reliability of system enhanced as individual units provide independent infrastructure for individuals willing to participate 	<ul style="list-style-type: none"> • as per Existing/Committed System • strong promotion/education and personal contact 	<ul style="list-style-type: none"> • as per Existing/Committed System • reliability of system enhanced as individual units provide back up diversion opportunity to organics collection, particularly for food waste, and independent diversion for individuals infrastructure
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods, etc.)</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted

Composting Facilities <ul style="list-style-type: none"> Existing centralized windrow leaf and yard waste composting facilities may be closed Central composting facilities (in vessel or windrow) for composting of source separated household organics (wet stream) and leaf and yard waste 	<ul style="list-style-type: none"> dependent on centralized in-vessel (or possibly windrow) composting facility for success of system for in-vessel system, level of sophistication means not as readily expanded when contingency required use of existing windrow composting facilities adds contingency and flexibility 	<ul style="list-style-type: none"> construct additional compost facilities (keep open windrow leaf and yard waste processing capacity) as required or develop arrangements with neighbouring regions in case of problems if compost quality unacceptable use as landfill cover ensure state-of-the-art technology and effective process control and management practices used ensure effective source separation to maximize potential for high quality compost 	<ul style="list-style-type: none"> composting dependent on limited number of facilities but reliability can be maintained with effective controls and management, contingency arrangements and strong promotion/education
Reuse Centres and Activities <ul style="list-style-type: none"> Municipal reuse centre Private reuse centre (e.g. Re-Use, Scarborough). Non-profit reuse centre (WASTEWISE, Halton). Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.). Food reuse organization (such as Second Harvest). Special goods exchange days 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects noted 	<ul style="list-style-type: none"> as per Existing/Committed System no additional required 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects noted
MRFs <ul style="list-style-type: none"> Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables 	<ul style="list-style-type: none"> as per Expanded Blue Box System dependent on MRF for processing of dry recyclables 	<ul style="list-style-type: none"> design and integrate collection system to best meet MRF needs arrange for use of other facilities, in the event of MRF failure promotion/education to support collection system and processing systems 	<ul style="list-style-type: none"> system relies on MRF for processing dry recyclables, however a number of collection and sorting arrangements could be considered as well as promotion/education

Wet/Dry System, Reliability, Single Approach (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots <i>located at compost facility</i> to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • as per Existing/Committed System • depots are a backup/alternative in event of failure of curbside collection of recyclables 	<ul style="list-style-type: none"> • maintain or expand facilities as required • promotion/education to raise awareness of opportunities 	<ul style="list-style-type: none"> • as per Existing/Committed System • depots are a backup/alternative to curbside collection in event of failure for recyclables
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program for wet/dry system</i> • <i>Promotion/education program for source reduction, precycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System • system relies very significantly on promotion/education to encourage effective participation and minimize contamination 	<ul style="list-style-type: none"> • consider diversity of approaches to reach widest audience 	<ul style="list-style-type: none"> • as per Existing/Committed System • system relies very significantly on promotion/education to encourage effective participation and minimize contamination

TABLE P-1.5
RESIDENTIAL WET/DRY SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: User Pay
 CRITERIA GROUP: Service
 CRITERIA: Reliability
 INDICATOR: Types and Range of Quantities of Wastes Accepted

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • <i>Curbside collection of residential waste from single family dwellings in three streams by specially designed trucks by municipal forces or contractors to municipalities</i> • <i>Collection of residential garbage from multi-family units in three streams by municipal forces or private contractors, where feasible</i> • <i>Regional recycling legislation (e.g. collection ban on grass clippings, Oakville)</i> • <i>Self haul of waste to landfills and transfer stations by residents</i> • <i>Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads</i> 	<ul style="list-style-type: none"> • no additional effect noted 	<ul style="list-style-type: none"> • none required 	<ul style="list-style-type: none"> • no additional effects identified

Wet/Dry System, Flexibility, Types and Quantities (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • <i>Provide carts to all single family households and some "other" households</i> • <i>Separation of waste into three streams (wet, dry, and garbage) by the householder</i> • <i>Expanded set of dry materials to be collected, including plastics, (PET, rigid plastic, bottles & tubes, film plastic, foam plastic and rigid trays); paper fibre (ONP, OCC, boxboard, polycoat, phone books, magazines and catalogues and mixed household paper); metal (steel and aluminum cans, aluminum trays and foil), clear and coloured glass and textiles</i> • <i>Recycling services at all multi-family buildings with 6 or more units (3R's Regulations)</i> • <i>Large bins provided in the garbage management area of multi-family buildings, where space permits Residents will be encouraged to separate their waste into three separate bags</i> 	<ul style="list-style-type: none"> • significant flexibility as collection system designed to accept wide range of dry recyclables • highly flexible as also accepts household organics - food as well as leaf and yard 	<ul style="list-style-type: none"> • strong promotion/education to encourage effective source separation and to minimize contamination 	<ul style="list-style-type: none"> • significant flexibility as collection system designed to accept wide range of dry recyclables • highly flexible as also accepts household organics - food as well as leaf and yard
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • <i>Collection of leaf and yard waste as part of three stream pick-up</i> • <i>Separate brush collection</i> • <i>Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites)</i> 	<ul style="list-style-type: none"> • handles much of leaf and yard wastes with other collection streams 	<ul style="list-style-type: none"> • on-going development of technologies for effective and efficient collection in Wet/Dry System 	<ul style="list-style-type: none"> • handles much of leaf and yard wastes with other collection streams

Wet/Dry System, Flexibility, Types and Quantities (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • Door to door distribution of backyard composters to 80% of single family households • Large 3-bin composting units distributed to apartment and co-operative housing complexes • Promotion of vermicomposting to multi-family units • Promotion of community composting 	<ul style="list-style-type: none"> • with extensive distribution quantities of organics diverted through backyard composters may increase, possibly off-set though by curbside collection of organics 	<ul style="list-style-type: none"> • encourage participation in backyard composting with distribution of free bins, promotion/education and personal contact 	<ul style="list-style-type: none"> • with extensive distribution quantities of organics diverted through backyard composters may increase, possibly off-set though by curbside collection of organics
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods, etc.)</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted 	<ul style="list-style-type: none"> • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted

Wet/Dry System, Flexibility, Types and Quantities (cont'd)

<p>Composting Facilities</p> <ul style="list-style-type: none"> Existing centralized windrow leaf and yard waste composting facilities may be closed Central composting facilities (in vessel or windrow) for composting of source separated household organics (wet stream) and leaf and yard waste 	<ul style="list-style-type: none"> in-vessel composting flexible to handle full range of food and yard wastes generated by residential sources quantities handled limited by design capacity of systems poor separation would have negative effect on processing 	<ul style="list-style-type: none"> strong promotion/education to ensure effective source separation of organics 	<ul style="list-style-type: none"> in-vessel composting flexible to handle full range of food and yard wastes generated by residential sources poor separation would have negative effect on processing
<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> Municipal reuse centre Private reuse centre (e.g. Re-Uze, Scarborough). Non-profit reuse centre (WASTEWISE, Halton). Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.). Food reuse organization (such as Second Harvest). Special goods exchange days 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects noted 	<ul style="list-style-type: none"> as per Existing/Committed System no additional required 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects noted
<p>MRFs</p> <ul style="list-style-type: none"> Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables 	<ul style="list-style-type: none"> MRF designed to handle full range of dry recyclables collected in three-stream system. Will require integration with collection system to maximize diversion 	<ul style="list-style-type: none"> expansion/replacement of existing MRFs to accommodate increased load and to integrate with collection system 	<ul style="list-style-type: none"> MRF designed to handle full range of dry recyclables collected in three-stream system. Will require integration with collection system to maximize diversion

Wet/Dry System, Flexibility, Types and Quantities (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots <i>located at compost facility</i> to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • as per Expanded Blue Box System • no additional effects noted 	<ul style="list-style-type: none"> • as per Expanded Blue Box System • no additional required 	<ul style="list-style-type: none"> • as per Expanded Blue Box System • no additional effects noted
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program for wet/dry system</i> • <i>Promotion/education program for source reduction, preycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • requires strong promotion/education campaign for the new system to encourage effective source separation, minimizing contamination and maximizing diversion 	<ul style="list-style-type: none"> • implement promotion/education programs as required 	<ul style="list-style-type: none"> • requires strong promotion/education campaign for the new system to encourage effective source separation, minimizing contamination and maximizing diversion

TABLE P-1.5
RESIDENTIAL WET/DRY SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Wet/Dry
 CRITERIA GROUP: Service
 CRITERIA: Flexibility
 INDICATOR: Compatibility with Existing System

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • <i>Curbside collection of residential waste from single family dwellings in three streams by specially designed trucks by municipal forces or contractors to municipalities</i> • <i>Collection of residential garbage from multi-family units in three streams by municipal forces or private contractors, where feasible</i> • <i>Regional recycling legislation (e.g. collection ban on grass clippings, Oakville)</i> • <i>Self haul of waste to landfills and transfer stations by residents</i> • <i>Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads</i> 	<ul style="list-style-type: none"> • not compatible with existing system • replacement of existing waste collection system required • require new trucks and collection equipment and new operation • householders need new carts • requires modified behaviour by residents 	<ul style="list-style-type: none"> • strong promotion/education, initially and on-going • provide bins etc. as required • staff training 	<ul style="list-style-type: none"> • requires significant change to Existing System, replacing most collection equipment and requiring modified behaviour of residents and modified operation by staff • extensive promotion both initially and on-going and with personal contact will minimize problems during transition and encourage effective participation to maximize diversion

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Provide carts to all single family households and some "other" households • Separation of waste into three streams (wet, dry, and garbage) by the householder • Expanded set of dry materials to be collected, including plastics, (PET, rigid plastic, bottles & tubes, film plastic, foam plastic and rigid trays); paper fibre (ONP, OCC, boxboard, polycoat, phone books, magazines and catalogues and mixed household paper); metal (steel and aluminum cans, aluminum trays and foil), clear and coloured glass and textiles • Recycling services at all multi-family buildings with 6 or more units (3R's Regulations) • Large bins provided in the garbage management area of multi-family buildings, where space permits Residents will be encouraged to separate their waste into three separate bags 	<ul style="list-style-type: none"> • not compatible with existing system • collection of dry recyclables and household organics in two of 3 streams • requires new equipment truck, bins, carts and new operations • requires modified behaviour by residents 	<ul style="list-style-type: none"> • strong promotion/education initially and on-going • provide new bins and carts 	<ul style="list-style-type: none"> • requires significant change to Existing System, replacing most collection equipment and requiring modified behaviour of residents and modified operation by staff • extensive promotion both initially and on-going, and with personal contact will minimize problems during transition and encourage effective participation to maximize diversion
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Collection of leaf and yard waste as part of three stream pick-up • Separate brush collection • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> • a change from Existing System • requires collection of leaf and yard waste with household organics • modified behaviour of residents • requires new equipment - trucks, bins, carts etc. • periodic brush collection and drop-off depots as per Existing/Committed System 	<ul style="list-style-type: none"> • as per garbage/recyclables components 	<ul style="list-style-type: none"> • requires significant change to Existing System, replacing most collection equipment and requiring modified behaviour of residents and modified operation by staff • extensive promotion both initially and on-going and with personal contact will minimize problems during transition and encourage effective participation to maximize diversion

Wet/Dry System, Flexibility, Compatibility (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • <i>Door to door distribution of backyard composters to 80% of single family households</i> • <i>Large 3-bin composting units distributed to apartment and co-operative housing complexes</i> • <i>Promotion of vermicomposting to multi-family units</i> • <i>Promotion of community composting</i> 	<ul style="list-style-type: none"> • extensive backyard composting requires no significant changes from Existing System although initially requires additional administration and requires significant on-going promotional commitments 	<ul style="list-style-type: none"> • as per Existing/Committed System • extensive promotion/education and personal contact maximize effective use 	<ul style="list-style-type: none"> • extensive backyard composting requires no significant changes from Existing System although initially requires additional administration and requires significant on-going promotional commitments
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods, etc.)</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted

Wet/Dry System, Flexibility, Compatibility (cont'd)

<p>Composting Facilities</p> <ul style="list-style-type: none"> Existing centralized windrow leaf and yard waste composting facilities may be closed <i>Central composting facilities (in vessel or windrow) for composting of source separated household organics (wet stream) and leaf and yard waste</i> 	<ul style="list-style-type: none"> approach compatible with existing system, but requires additional, new centralized in-vessel composting facilities use of existing windrow composting facilities adds flexibility 	<ul style="list-style-type: none"> none required 	<ul style="list-style-type: none"> approach compatible with existing system, but requires additional, new centralized in-vessel composting facilities use of existing windrow composting facilities adds flexibility
<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> Municipal reuse centre Private reuse centre (e.g. Re-Uze, Scarborough). Non-profit reuse centre (WASTEWISE, Halton). Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.). Food reuse organization (such as Second Harvest). Special goods exchange days 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects identified 	<ul style="list-style-type: none"> as per Existing/Committed System no additional required 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects identified
<p>MRFs</p> <ul style="list-style-type: none"> Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. <i>Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables</i> 	<ul style="list-style-type: none"> compatible with Existing System, but requires expansion, modification or replacement of existing MRF to handle increased range and quantities of materials and to integrate with new collection system 	<ul style="list-style-type: none"> identify processing requirements and relevant elements of collection system which affect processing design 	<ul style="list-style-type: none"> compatible with Existing System, but requires expansion, modification or replacement of existing MRF to handle increased range and quantities of materials and to integrate with new collection system

Wet/Dry System, Flexibility, Compatibility (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots <i>located at compost facility</i> to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • compatible with Existing System • some modification required to handle increased range and quantities of materials 	<ul style="list-style-type: none"> • none required 	<ul style="list-style-type: none"> • compatible with Existing System • some modification required to handle increased range and quantities of materials
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program for wet/dry system</i> • <i>Promotion/education program for source reduction, precycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • new promotion/education program required but approaches are applicable 	<ul style="list-style-type: none"> • none required 	<ul style="list-style-type: none"> • new promotion/education program required but approaches are applicable

TABLE P-1.5
RESIDENTIAL WET/DRY SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Wet/Dry
 CRITERIA GROUP: Service
 CRITERIA: Performance
 INDICATOR: Quantity Diverted or Requiring Landfilling

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • <i>Curbside collection of residential waste from single family dwellings in three streams by specially designed trucks by municipal forces or contractors to municipalities</i> • <i>Collection of residential garbage from multi-family units in three streams by municipal forces or private contractors, where feasible</i> • <i>Regional recycling legislation (e.g. collection ban on grass clippings, Oakville)</i> • <i>Self haul of waste to landfills and transfer stations by residents</i> • <i>Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads</i> 	<ul style="list-style-type: none"> • disposal of residential waste estimated to decrease by between 23% and 27% from Existing/Committed System • 40% to 56% of waste stream disposed at landfill 	<ul style="list-style-type: none"> • no additional required 	<ul style="list-style-type: none"> • disposal of residential waste estimated to decrease by between 23% and 27% from Existing/Committed System • 40% to 56% of waste stream disposed at landfill

Wet/Dry System, Performance, Quantities (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • <i>Provide carts to all single family households and some "other" households</i> • <i>Separation of waste into three streams (wet, dry, and garbage) by the householder</i> • <i>Expanded set of dry materials to be collected, including plastics, (PET, rigid plastic, bottles & tubes, film plastic, foam plastic and rigid trays); paper fibre (ONP, OCC, boxboard, polycoat, phone books, magazines and catalogues and mixed household paper); metal (steel and aluminum cans, aluminum trays and foil), clear and coloured glass and textiles</i> • <i>Recycling services at all multi-family buildings with 6 or more units (3R's Regulations)</i> • <i>Large bins provided in the garbage management area of multi-family buildings, where space permits Residents will be encouraged to separate their waste into three separate bags</i> 	<ul style="list-style-type: none"> • potential to divert dry recyclables representing an estimated 20% to 24% of residential waste stream through residential curbside, collection depots and multi-family collection programs • potential to divert organics representing an estimated 17% to 22% of residential waste stream 	<ul style="list-style-type: none"> • requires modified collection system • strong promotion/education required 	<ul style="list-style-type: none"> • potential to divert dry recyclables representing an estimated 20% to 24% of residential waste stream through residential curbside, collection depots and multi-family collection programs • potential to divert organics representing an estimated 17% to 22% of residential waste stream
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • <i>Collection of leaf and yard waste as part of three stream pick-up</i> • <i>Separate brush collection</i> • <i>Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites)</i> 	<ul style="list-style-type: none"> • estimate included in organics above 	<ul style="list-style-type: none"> • none required 	<ul style="list-style-type: none"> • estimate included in organics above

Wet/Dry System, Performance, Quantities (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • <i>Door to door distribution of backyard composters to 80% of single family households</i> • <i>Large 3-bin composting units distributed to apartment and co-operative housing complexes</i> • <i>Promotion of vermicomposting to multi-family units</i> • <i>Promotion of community composting</i> 	<ul style="list-style-type: none"> • an estimated diversion of between 6% and 10% of residential waste stream achievable through backyard and on-site composting - depends on participation in Wet/Dry program • significantly increase diversion of food waste (between 60% and 75%) 	<ul style="list-style-type: none"> • door-to-door promotion and distribution to enhance participation and performance 	<ul style="list-style-type: none"> • an estimated diversion of between 6% and 10% of residential waste stream achievable through backyard and on-site composting - depends on participation in Wet/Dry program • significantly increase diversion of food waste (between 60% and 75%)
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods, etc.)</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified

Wet/Dry System, Performance, Quantities (cont'd)

Composting Facilities <ul style="list-style-type: none"> Existing centralized windrow leaf and yard waste composting facilities may be closed <i>Central composting facilities (in vessel or windrow) for composting of source separated household organics (wet stream) and leaf and yard waste</i> 	<ul style="list-style-type: none"> contributes to an estimated diversion of 17 to 22% of residential waste stream 	<ul style="list-style-type: none"> ensure maintenance and proper functioning of existing facilities promotion/education to encourage high participation and correct source separation 	<ul style="list-style-type: none"> significant (17%-22%) diversion of residential waste stream achieved by encouraging effective source separation of organics and by careful process control at composting facilities significant diversion of organics
Reuse Centres and Activities <ul style="list-style-type: none"> Municipal reuse centre Private reuse centre (e.g. Re-Uze, Scarborough). Non-profit reuse centre (WASTEWISE, Halton). Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.). Food reuse organization (such as Second Harvest). Special goods exchange days 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects identified 	<ul style="list-style-type: none"> as per Existing/Committed System no additional required 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects identified
MRFs <ul style="list-style-type: none"> Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. <i>Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables</i> 	<ul style="list-style-type: none"> contributes to diversion by processing dry recyclables, representing from 21% to 27% of residential waste 	<ul style="list-style-type: none"> promotion/education to encourage correct source separation of materials by residents identify new markets for expanded range of materials 	<ul style="list-style-type: none"> contributes to diversion by processing dry recyclables, representing from 21% to 27% of residential waste

Wet/Dry System, Performance, Quantities (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots <i>located at compost facility</i> to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • diverts 1% to 4% of residential waste stream • may be higher due to increased range of materials collected • may require additional capacity, modification and retrofits to handle new materials and increased quantities 	<ul style="list-style-type: none"> • promotion/education to reuse awareness of depots 	<ul style="list-style-type: none"> • diverts 1% to 4% of residential waste stream • may be higher due to increased range of materials collected • may require additional capacity, modification and retrofits to handle new materials and increased quantities
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program for wet/dry system</i> • <i>Promotion/education program for source reduction, precycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • substantial promotion/education essential to ensure effective implementation of new system • diversion achieved through promotion not easily quantified 	<ul style="list-style-type: none"> • none noted 	<ul style="list-style-type: none"> • substantial promotion/education essential to ensure effective implementation of new system • diversion achieved through promotion not easily quantified

TABLE P-1.6
RESIDENTIAL MIXED WASTE PROCESSING SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Mixed Waste Processing
CRITERIA GROUP: Service
CRITERIA: Reliability
INDICATOR: Proven Technologies Based on Experience in Other Jurisdictions

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors • Self haul of waste to landfills and transfer stations by residents • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • as per Existing/Committed System • potential negative effect on source separation if residents assume recyclables and organics effectively recovered and processed from third bag 	<ul style="list-style-type: none"> • as per Existing/Committed System • promotion/education to encourage continued/increased source separation 	<ul style="list-style-type: none"> • as per Existing/Committed System • potential negative effect on source separation if residents assume recyclables and organics effectively recovered and processed from third bag

Mixed Waste Processing System, Reliability, Proven Technology (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • Expansion of curbside collection of Blue Box materials from single family dwellings in some municipalities to include all materials designated basic Blue Box waste and at least two materials designated as supplementary Blue Box waste in the 3Rs Regulations • Curbside collection of additional dry materials • Recycling services at all multi-family buildings with 6 or more units • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted 	<ul style="list-style-type: none"> • as per Existing/Committed System 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted

Mixed Waste Processing System, Reliability, Proven Technology (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • <i>Door to door distribution of backyard composters to 80% of single family households</i> • <i>Large 3-bin composting units distributed to apartment and co-operative housing complexes</i> • <i>Promotion of vermicomposting to multi-family units</i> • <i>Promotion of community composting</i> 	<ul style="list-style-type: none"> • as per Existing Committed System • high distribution of composters proven to contribute to increased waste diversion (e.g. Centre and South Hastings), however some residents with composters do not use them effectively 	<ul style="list-style-type: none"> • increased promotion/education, door-to-door bin distribution with personal contact and follow up 	<ul style="list-style-type: none"> • as per Existing Committed System • high distribution of composters proven to contribute to increased waste diversion (e.g. Centre and South Hastings), however some residents with composters do not use them effectively
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods, etc)</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods. • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified

Mixed Waste Processing System, Reliability, Proven Technology (cont'd)

<p>Composting Facilities</p> <ul style="list-style-type: none"> Centralized windrow composting of leaf and yard waste <i>New mixed waste processing and composting facility</i> 	<ul style="list-style-type: none"> as per Existing/Committed for windrow composting many mixed waste processing and composting facilities have been established. Many of these have experienced on-going problems with equipment and operations (e.g. equipment failure and excessive odours) and with product compost quality many MSW processing facilities exploit waste for refuse derived fuel (RDF) which currently is not possible in Ontario achieves mass/volume reduction which effectively decreases quantities disposed at landfill 	<ul style="list-style-type: none"> ensure extensive monitoring and careful management of operations, including adequate start up time to achieve optimum conditions required for effective composting reserve capital fund for retrofits as required 	<ul style="list-style-type: none"> potential for successful processing of third bag of waste if designed effectively and managed carefully
<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> Municipal reuse centre Private reuse centre (e.g. Re-Uze, Scarborough) Non-profit reuse centre (WASTEWISE, Halton) Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) Food reuse organization (such as Second Harvest) Special goods exchange days 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects noted 	<ul style="list-style-type: none"> as per Existing/Committed System no additional required 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects noted
<p>MRFs</p> <ul style="list-style-type: none"> Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. <i>Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables</i> 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects noted 	<ul style="list-style-type: none"> as per Existing/Committed System no additional required 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects noted

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program on source reduction, pre-cycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System • also key requirement for extensive backyard composting 	<ul style="list-style-type: none"> • as per Existing/Committed System • on-going promotion/education with personal contact 	<ul style="list-style-type: none"> • as per Existing/Committed System • also key requirement for extensive backyard composting

TABLE P-1.6
RESIDENTIAL MIXED WASTE PROCESSING SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Mixed Waste Processing
CRITERIA GROUP: Service
CRITERIA: Reliability
INDICATOR: Degree of Reliance on Single Approach

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors • Self haul of waste to landfills and transfer stations by residents • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • as per Existing/Committed System • reliance on processing third bag without source separation may encourage less source separation resulting in decreased recovery 	<ul style="list-style-type: none"> • as per Existing/Committed System • promotion/education to encourage continued/increased source separation 	<ul style="list-style-type: none"> • as per Existing/Committed System • with effective promotion/education source separation can be maintained/increased while relying on processing of third bag to recover additional recyclables

Mixed Waste Processing System, Reliability, Single Approach (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • Expansion of curbside collection of Blue Box materials from single family dwellings in some municipalities to include all materials designated basic Blue Box waste and at least two materials designated as supplementary Blue Box waste in the 3Rs Regulations • Curbside collection of additional dry materials • Recycling services at all multi-family buildings with 6 or more units • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects noted

Mixed Waste Processing System, Reliability, Single Approach (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • <i>Door to door distribution of backyard composters to 80% of single family households</i> • <i>Large 3-bin composting units distributed to apartment and co-operative housing complexes</i> • <i>Promotion of vermicomposting to multi-family units</i> • <i>Promotion of community composting</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System • reliance on extensive distribution of backyard composters and willingness of residents to use them to increase diversion of organics • home composting limited for diversion of food waste • individual units enhance reliability since some will be able to divert waste even when others do not use them 	<ul style="list-style-type: none"> • as per Existing/Committed System • ensure offer bin types to meet residents needs • ensure extensive promotion/education (including personal contact) 	<ul style="list-style-type: none"> • as per Existing/Committed System • with extensive promotion/education and personal contact, extensive distribution of composters is a reliable method to increase diversion of organics though diversion of food waste still limited
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods, etc)</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods. • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified

Mixed Waste Processing System, Reliability, Single Approach (cont'd)

Composting Facilities <ul style="list-style-type: none"> Centralized windrow composting of leaf and yard waste <i>New mixed waste processing and composting facility</i> 	<ul style="list-style-type: none"> potential negative effect in case of facility breakdown, all of third bag would be disposed system relies on processing of third bag to increase diversion. Facilities are prone to operational problems which may limit diversion. Failure would mean landfilling third bag materials achieves mass/volume reduction which effectively decreases waste disposed whether quality of compost good or bad 	<ul style="list-style-type: none"> proper maintenance and monitoring to ensure effective operation and quality product and to prevent breakdown promotion of other components to reduce reliance on third bag collection/processing 	<ul style="list-style-type: none"> potential for minimizing plant breakdown and operational problems and for ensuring product quality to maximize diversion
Reuse Centres and Activities <ul style="list-style-type: none"> Municipal reuse centre Private reuse centre (e.g. Re-Uze, Scarborough) Non-profit reuse centre (WASTEWISE, Halton) Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) Food reuse organization (such as Second Harvest) Special goods exchange days 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects identified 	<ul style="list-style-type: none"> as per Existing/Committed System no additional required 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effects identified
MRFs <ul style="list-style-type: none"> Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. <i>Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables</i> 	<ul style="list-style-type: none"> same as Existing/Committed 	<ul style="list-style-type: none"> same as Existing/Committed 	<ul style="list-style-type: none"> same as Existing/Committed

Mixed Waste Processing System, Reliability, Single Approach (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program on source reduction, pre-cycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified • relies on promotion/education to encourage continued/increased source separation 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified • relies on promotion/education to encourage continued/increased source separation

TABLE P-1.6
RESIDENTIAL MIXED WASTE PROCESSING SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Mixed Waste Processing
CRITERIA GROUP: Service
CRITERIA: Flexibility
INDICATOR: Types and Range of Quantities of Wastes Accepted

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors • Self haul of waste to landfills and transfer stations by residents • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • handles full quantity and range of residential waste generated and disposed 	<ul style="list-style-type: none"> • none required 	<ul style="list-style-type: none"> • handles full quantity and range of residential waste generated and disposed

Mixed Waste Processing System, Flexibility, Types and Quantities (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • Expansion of curbside collection of Blue Box materials from single family dwellings in some municipalities to include all materials designated basic Blue Box waste and at least two materials designated as supplementary Blue Box waste in the 3Rs Regulations • Curbside collection of additional dry materials • Recycling services at all multi-family buildings with 6 or more units • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • same as Existing/Committed 	<ul style="list-style-type: none"> • same as Existing/Committed 	<ul style="list-style-type: none"> • same as Existing/Committed
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> • same as Existing/Committed • no additional effects identified 	<ul style="list-style-type: none"> • same as Existing/Committed • no additional required 	<ul style="list-style-type: none"> • same as Existing/Committed • no additional effects identified

Mixed Waste Processing System, Flexibility, Types and Quantities (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • Door to door distribution of backyard composters to 80% of single family households • Large 3-bin composting units distributed to apartment and co-operative housing complexes • Promotion of vermicomposting to multi-family units • Promotion of community composting 	<ul style="list-style-type: none"> • as per Existing/Committed • quantities of organics diverted would likely increase due to wide distribution of composters • diversion of food waste limited due in part to large number of multi-family buildings 	<ul style="list-style-type: none"> • promotion/education personal contact to maintain enhance residential participation 	<ul style="list-style-type: none"> • as per Existing/Committed • quantities of organics diverted would likely increase due to wide distribution of composters • diversion of food waste limited due in part to large number of multi-family buildings
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods, etc)</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods. • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing/Committed System 	<ul style="list-style-type: none"> • as per Existing/Committed System 	<ul style="list-style-type: none"> • as per Existing/Committed System

Mixed Waste Processing System, Flexibility, Types and Quantities, Types and Quantities (cont'd)

Composting Facilities <ul style="list-style-type: none"> Centralized windrow composting of leaf and yard waste <i>New mixed waste processing and composting facility</i> 	<ul style="list-style-type: none"> captures full quantity and range of materials generated and disposed by households range of materials and quantities diverted depend on contamination and markets 	<ul style="list-style-type: none"> identify markets for widest range of materials ensure effective separation of materials for markets 	<ul style="list-style-type: none"> potential positive effect of increased diversion of waste from landfill captures full quantity and range of materials generated and disposed by households range of materials and quantities diverted depend on contamination and markets
Reuse Centres and Activities <ul style="list-style-type: none"> Municipal reuse centre Private reuse centre (e.g. Re-Use, Scarborough) Non-profit reuse centre (WASTEWISE, Halton) Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) Food reuse organization (such as Second Harvest) Special goods exchange days 	<ul style="list-style-type: none"> same as Existing/Committed 	<ul style="list-style-type: none"> same as Existing/Committed 	<ul style="list-style-type: none"> same as Existing/Committed
MRFs <ul style="list-style-type: none"> Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. <i>Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables</i> 	<ul style="list-style-type: none"> same as Existing/Committed 	<ul style="list-style-type: none"> same as Existing/Committed 	<ul style="list-style-type: none"> same as Existing/Committed

Mixed Waste Processing System, Flexibility, Types and Quantities (cont'd)

<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program on source reduction, pre-cycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effects identified

TABLE P-1.6
RESIDENTIAL MIXED WASTE PROCESSING SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Mixed Waste Processing
CRITERIA GROUP: Service
CRITERIA: Flexibility
INDICATOR: Compatibility with Existing System

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors • Self haul of waste to landfills and transfer stations by residents • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • as per Existing/Committed System • some modification may be required to schedules to integrate with processing facility operation • may discourage source separation of recyclables and organics on assumption will be recovered at MSW processing facility 	<ul style="list-style-type: none"> • none identified • promotion/education to encourage continued, increased source separation 	<ul style="list-style-type: none"> • as per Existing/Committed System • some modification may be required to schedules to integrate with processing facility operation • may discourage source separation of recyclables and organics on assumption will be recovered at MSW processing facility

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • Expansion of curbside collection of Blue Box materials from single family dwellings in some municipalities to include all materials designated basic Blue Box waste and at least two materials designated as supplementary Blue Box waste in the 3Rs Regulations • Curbside collection of additional dry materials • Recycling services at all multi-family buildings with 6 or more units • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional effects identified
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional effects identified

Mixed Waste Processing System, Flexibility, Compatibility (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • Door to door distribution of backyard composters to 80% of single family households • Large 3-bin composting units distributed to apartment and co-operative housing complexes • Promotion of vermicomposting to multi-family units • Promotion of community composting 	<ul style="list-style-type: none"> • as per Existing/Committed System • extensive backyard composting requires no significant changes to Existing System except initial administration and on-going promotion commitments 	<ul style="list-style-type: none"> • as per Existing/Committed System • promotion/education and personal contact 	<ul style="list-style-type: none"> • as per Existing/Committed System • extensive backyard composting requires no significant changes to Existing System except initial administration and on-going promotion commitments
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods, etc)</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods. • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional effects identified

Mixed Waste Processing System, Flexibility, Compatibility (cont'd)

<p>Composting Facilities</p> <ul style="list-style-type: none"> • Centralized windrow composting of leaf and yard waste • <i>New mixed waste processing and composting facility</i> 	<ul style="list-style-type: none"> • requires new mixed waste processing facility and likely new composting facility - many MSW processing facilities exploit waste for refuse derived fuel (RDF) which is currently not possible in Ontario • contradicts Ontario 3Rs approach to waste diversion which encourages source separation - lower source separation would reduce recovery due to contamination 	<ul style="list-style-type: none"> • promotion/education to encourage continued/increased source separation 	<ul style="list-style-type: none"> • requires new mixed waste processing facility and likely new composting facility - many MSW processing facilities exploit waste for refuse derived fuel (RDF) which is currently not possible in Ontario • contradicts Ontario 3Rs approach to waste diversion which encourages source separation - lower source separation would reduce recovery due to contamination
<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> • Municipal reuse centre • Private reuse centre (e.g. Re-Uze, Scarborough) • Non-profit reuse centre (WASTEWISE, Halton) • Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) • Food reuse organization (such as Second Harvest) • Special goods exchange days 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional effects identified

Mixed Waste Processing System, Flexibility, Compatibility (cont'd)

<p>MRFs</p> <ul style="list-style-type: none"> • Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. • <i>Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables</i> 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional effects identified
<p>Residential Recycling Depots and Transfer Stations</p> <ul style="list-style-type: none"> • Drop-off depots for dry recyclables • Depots located at transfer stations to provide recycling opportunities to self-haul generators • Drop-off depots for multi-family residents not serviced by recycling • Drop-off depot for rural households • Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste • Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional effects identified
<p>Residential Promotion and Education</p> <ul style="list-style-type: none"> • 3Rs promotion and education program, focused on the residential sector • Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. • <i>Promotion/education program on source reduction, pre-cycling, reuse and recycling</i> 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional effects identified 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional required 	<ul style="list-style-type: none"> • as per Existing/Committing System • no additional effects identified

TABLE P-1.6
RESIDENTIAL MIXED WASTE PROCESSING SYSTEM
GENERIC SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: Mixed Waste Processing
 CRITERIA GROUP: Service
 CRITERIA: Performance
 INDICATOR: Quantity Diverted or Requiring Landfilling

Component Category/ Components	Component Environmental Effects	Mitigation/ Enhancement	Component Net Effects
Garbage Collection and Disposal <ul style="list-style-type: none"> • Curbside collection of residential garbage from single family dwellings by municipal forces or contractors to municipalities • Collection of residential garbage from multi-family units by municipal forces or private contractors • Self haul of waste to landfills and transfer stations by residents • Regional recycling legislation (e.g. collection ban on grass clippings, Oakville) • Landfill bans on some items (e.g. recyclable materials, tires, white goods, etc.) with disposal surcharges and rejection of some loads 	<ul style="list-style-type: none"> • significantly reduced quantity of garbage sent to disposal from Mixed Waste processing facility (20% to 28% of residential waste stream) a decrease of between 47% and 51% of waste stream • poor quality MSW compost will be landfilled, or used as landfill cover reducing effective diversion significantly (from 17% to 20%) 	<ul style="list-style-type: none"> • ensure effective process control to produce high quality compost which can be diverted 	<ul style="list-style-type: none"> • significantly reduced quantity of garbage sent to disposal from Mixed Waste processing facility (20% to 28% of residential waste stream) a decrease of between 47% and 51% of waste stream • poor quality MSW compost will be landfilled, or used as landfill cover reducing effective diversion significantly (from 17% to 20%) • increased diversion from disposal

Mixed Waste Processing System, Performance, Quantities (cont'd)

<p>Residential Recycling and Collection</p> <ul style="list-style-type: none"> • Blue Box recycling mandated by provincial regulations for municipalities with more than 5,000 population • Expansion of curbside collection of Blue Box materials from single family dwellings in some municipalities to include all materials designated basic Blue Box waste and at least two materials designated as supplementary Blue Box waste in the 3Rs Regulations • Curbside collection of additional dry materials • Recycling services at all multi-family buildings with 6 or more units • Collection of bins of recyclables from multi-family units 	<ul style="list-style-type: none"> • same as Existing/Committed 	<ul style="list-style-type: none"> • same as Existing/Committed 	<ul style="list-style-type: none"> • same as Existing/Committed
<p>Residential Leaf and Yard Waste Collection</p> <ul style="list-style-type: none"> • Seasonal curbside collection of leaf and yard waste • Drop-off depot for leaf and yard waste (depots located at landfill and other convenient sites) 	<ul style="list-style-type: none"> • same as Existing/Committed • an estimated 6% to 9% diversion of residential waste stream possible depends in part on performance of backyard composting 	<ul style="list-style-type: none"> • none identified 	<ul style="list-style-type: none"> • same as Existing/Committed • an estimated 6% to 9% diversion of residential waste stream possible depends in part on performance of backyard composting

Mixed Waste Processing System, Performance, Quantities (cont'd)

<p>Residential Household Composting</p> <ul style="list-style-type: none"> • <i>Door to door distribution of backyard composters to 80% of single family households</i> • <i>Large 3-bin composting units distributed to apartment and co-operative housing complexes</i> • <i>Promotion of vermicomposting to multi-family units</i> • <i>Promotion of community composting</i> 	<ul style="list-style-type: none"> • an estimated 6% to 9% diversion of residential waste stream possible 	<ul style="list-style-type: none"> • promotion/education and personal contact can enhance performance 	<ul style="list-style-type: none"> • same as Existing/Committed • an estimated 6% to 9% diversion of residential waste stream possible
<p>Other Residential Waste Diversion (HHW, Toxic Taxi, White Goods, etc)</p> <ul style="list-style-type: none"> • Special curbside collections of Christmas trees • Special and weekly curbside collections of white goods. • Drop-off depots for white goods • Special curbside collection for bulky items (furniture) • Permanent drop-off depots for household hazardous waste (HHW) • Special household hazardous waste drop-off days (one per year, one per months etc.) • Toxic Taxi service for collection of large quantities of HHW at the household • Mobile HHW depots 	<ul style="list-style-type: none"> • same as Existing/Committed 	<ul style="list-style-type: none"> • same as Existing/Committed 	<ul style="list-style-type: none"> • same as Existing/Committed

Mixed Waste Processing System, Performance, Quantities (cont'd)

<p>Composting Facilities</p> <ul style="list-style-type: none"> Centralized windrow composting of leaf and yard waste <i>New mixed waste processing and composting facility</i> 	<ul style="list-style-type: none"> same as Existing/Committed for leaf and yard waste processing processing of third bag to recover recyclables results in an additional diversion of an estimated 7% to 10% of residential waste stream MSW composting results in additional diversion of an estimated 33% to 39% of residential waste stream beyond Existing/Committed System generally lower quality of end product (compost and recyclables) since not source separated total diversion of approximately 41% to 49% of residential waste stream potential diversion effect is substantially reduced when compost quality is low and must be landfilled (reduced by 24% to 30%) 	<ul style="list-style-type: none"> ensure careful process control to minimize operational problems maximize source separation to enhance compost quantity 	<ul style="list-style-type: none"> an estimated total diversion of between 41% to 49% diversion reduced when compost quality is low and must be landfilled (reduced by 24% to 30%)
<p>Reuse Centres and Activities</p> <ul style="list-style-type: none"> Municipal reuse centre Private reuse centre (e.g. Re-Uze, Scarborough) Non-profit reuse centre (WASTEWISE, Halton) Charitable reuse centres run by social service organizations (Goodwill, Salvation Army, etc.) Food reuse organization (such as Second Harvest) Special goods exchange days 	<ul style="list-style-type: none"> same as Existing/Committed 	<ul style="list-style-type: none"> same as Existing/Committed 	<ul style="list-style-type: none"> same as Existing/Committed

Mixed Waste Processing System, Performance, Quantities (cont'd)

MRFs <ul style="list-style-type: none"> Processing centres (MRFs) for dry recyclables collected from the residential (and minor amounts from the commercial/institutional) sector. <i>Construct one new MRF and expand existing MRF(s) to process larger stream of dry recyclables</i> 	<ul style="list-style-type: none"> same as Existing/Committed 	<ul style="list-style-type: none"> same as Existing/Committed 	<ul style="list-style-type: none"> same as Existing/Committed
Residential Recycling Depots and Transfer Stations <ul style="list-style-type: none"> Drop-off depots for dry recyclables Depots located at transfer stations to provide recycling opportunities to self-haul generators Drop-off depots for multi-family residents not serviced by recycling Drop-off depot for rural households Community Recycling Centres to accept recyclables household hazardous waste, reusable items and residential waste Satellite drop-off facilities for recycling (neighbourhood recycling depots and mini recycling depots) 	<ul style="list-style-type: none"> no effects identified 	<ul style="list-style-type: none"> none required 	<ul style="list-style-type: none"> no effects identified
Residential Promotion and Education <ul style="list-style-type: none"> 3Rs promotion and education program, focused on the residential sector Consumer education program to reduce waste generation, includes videos, posters, calendars, pamphlets, advertisements etc. <i>Promotion/education program on source reduction, pre-cycling, reuse and recycling</i> 	<ul style="list-style-type: none"> same as Existing/Committed 	<ul style="list-style-type: none"> same as Existing/Committed 	<ul style="list-style-type: none"> same as Existing/Committed

**TABLE P-2.1
RESIDENTIAL EXISTING SYSTEM
REGION OF DURHAM
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Durham
SYSTEM: Residential Existing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> technology for all components are proven some operational problems have been identified which can be mitigated (e.g. odour from compost plants, contamination) 	<ul style="list-style-type: none"> residential Existing System is considered reliable since it is based on proven technology and relies on the integration of several different approaches for most materials 	<u>Advantages</u> <ul style="list-style-type: none"> reliability achieved because core technology is proven and includes a range of approaches <u>Disadvantage</u> <ul style="list-style-type: none"> experience has demonstrated some reliability problems (eg. odours at compost) which can be mitigated
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> system is not dependent on single approach or facility, although processing of dry materials performed at only one MRF extra capacity can mitigate this effect 		

**TABLE P-2.1
RESIDENTIAL EXISTING SYSTEM
REGION OF DURHAM
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Durham
SYSTEM: Residential Existing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accepted	<ul style="list-style-type: none"> Existing System accepts limited range and quantity of recyclable materials that are accommodated in existing facilities and approaches some approaches well-suited for expansion of quantities or range of materials (e.g. reuse centres, depots, and Blue Box for some dry materials) 	<ul style="list-style-type: none"> existing infrastructure has limited flexibility Durham MRF requires expansion to handle larger quantity and range of materials collection system (Blue Box) could be modified to handle larger quantity and range of materials 	<u>Advantages</u> <ul style="list-style-type: none"> system could be slightly expanded <u>Disadvantages</u> <ul style="list-style-type: none"> flexibility limited by lack of markets for secondary materials and capacity of existing infrastructure very limited flexibility for diversion of food waste
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> not applicable 		

**TABLE P-2.1
RESIDENTIAL EXISTING SYSTEM
REGION OF DURHAM
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Durham
SYSTEM: Residential Existing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 27% residential waste diversion achieved in Durham • an estimated 30% diversion with source reduction included 	<ul style="list-style-type: none"> • diversion quantities from residential waste stream will not meet Ontario targets 	<u>Disadvantages</u> <ul style="list-style-type: none"> • an estimated 70% to 73% of waste continues to be landfilled

TABLE P-2.2
RESIDENTIAL EXISTING/COMMITTED SYSTEM
REGION OF DURHAM
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Durham
 SYSTEM: Residential Existing/Committed

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> • as per Existing System • Mandatory legislation requiring recycling and other diversion services proven to contribute to waste diversion 	<ul style="list-style-type: none"> • elements of system are proven to be reliable • system is not prone to failure by being reliant on a single approach • technological elements have been proven • 3Rs legislation may enhance reliability 	<u>Advantages</u> <ul style="list-style-type: none"> • as per Existing System • 3Rs regulations may enhance reliance on voluntary recycling
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> • as per Existing System • 3Rs legislation may enhance reliance on voluntary recycling 		<u>Disadvantages</u> <ul style="list-style-type: none"> • as per Existing System • recycling still relies on willingness of residents to participate

TABLE P-2.2
RESIDENTIAL EXISTING/COMMITTED SYSTEM
REGION OF DURHAM
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Durham
 SYSTEM: Residential Existing/Committed

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accepted	<ul style="list-style-type: none"> • MRF is presently operating at capacity and expansion of existing MRF is committed to accommodate increased quantities • no significant change in types or quantities of material accepted • some approaches well-suited for expansion of quantities or range of materials (eg. reuse centres, depots) • limited flexibility to divert food waste 	<ul style="list-style-type: none"> • collection system is flexible and increased quantities of materials can be accepted • Existing/Committed system is compatible with Existing System • processing capacity is being expanded 	<u>Advantages</u> <ul style="list-style-type: none"> • system could be expanded • collection system of Existing/Committed System compatible with Existing System <u>Disadvantages</u> <ul style="list-style-type: none"> • additional quantities require new processing facility or altered systems in existing MRF • limited flexibility to divert food waste
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> • Region's Existing/Committed program calls only for new backyard composters in addition to existing components • expanding Existing Systems (eg. Igloo) 		

TABLE P-2.2
RESIDENTIAL EXISTING/COMMITTED SYSTEM
REGION OF DURHAM
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Durham

SYSTEM: Residential Existing/Committed

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • estimated 30% residential waste diversion to hold constant until 2000 • an estimated 33% waste diversion with source reduction included 	<ul style="list-style-type: none"> • an additional 4% of residential waste stream diverted (beyond Existing System) 	<u>Advantages</u> <ul style="list-style-type: none"> • 30% to 33% waste diversion to be achievable <u>Disadvantages</u> <ul style="list-style-type: none"> • diversion not significantly increased beyond Existing System

TABLE P-2.3
RESIDENTIAL DIRECT COST SYSTEM
DURHAM REGION
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Durham
 SYSTEM: Direct Cost

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> • as per Existing/Committed System • Direct Cost system proven to contribute to increasing waste diversion 	<ul style="list-style-type: none"> • system is reliable • relies on single approach of pay-by-the-bag levy, which is proven to contribute to diversion. Also, a reliable range of diversion opportunities exist to make system reliable 	<u>Advantages</u> <ul style="list-style-type: none"> • Direct Cost approach is a simple incentive increasing residents willingness to decrease waste disposal through increased diversion and possibly source reduction • still exploits a combination of proven approaches and extends backyard composting option <u>Disadvantages</u> <ul style="list-style-type: none"> • may increase illegal dumping of wastes but with monitoring and promotion this can be minimized
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> • Direct Cost System relies on relatively simple pay-by-the-bag levy (other mechanisms also possible) to provide additional incentive for diversion • Diversion system relies on reliable range of approaches as per Existing/Committed System 		

**TABLE P-2.3
RESIDENTIAL DIRECT COST SYSTEM
DURHAM REGION
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Durham
SYSTEM: Direct Cost

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accepted	<ul style="list-style-type: none"> no significant change in types of materials from Existing/Committed system quantities collected are likely to rise, requiring modified operation or increased capacity of facilities and collection systems 	<ul style="list-style-type: none"> system designed to handle and could be expanded to accommodate increased quantities of materials builds on Existing System; does not require fundamental change 	<u>Advantages</u> <ul style="list-style-type: none"> simple incentive to increase quantity of material diverted builds on Existing Systems and infrastructure and extends backyard composter option not reliant on increasing range of materials but may do so <u>Disadvantages</u> <ul style="list-style-type: none"> limited flexibility to divert food waste - backyard composting/multi-family on-site composting only may require expansion/modification of existing processing facilities and collection systems to handle increased quantities may require a revised collection schedule or additional trucks to accommodate increased quantities of recyclables
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> compatible with Existing System Direct Cost System uses Existing Systems and infrastructure may require additional collection capacity and shift to weekly collection of recyclables may require expansion of composting and dry processing facilities 		

**TABLE P-2.3
RESIDENTIAL DIRECT COST SYSTEM
DURHAM REGION
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Durham
SYSTEM: Direct Cost

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 43% residential waste diversion possible • an estimated 46% diversion possible with source reduction included (source reduction may be greater due to effect specifically from Direct Cost System (not quantified due to limited reliable data)) 	<ul style="list-style-type: none"> • significant increases in waste diverted from landfill • an estimated additional 14% diversion over Existing/Committed System possible 	<u>Advantages</u> <ul style="list-style-type: none"> • residential waste diversion increased significantly • builds an existing/committed system • Direct Cost may also encourage additional source reduction <u>Disadvantages</u> <ul style="list-style-type: none"> • potential for illegal dumping of waste • not all effects of Direct Cost System adequately documented to quantify reliably • limited diversion of food waste (33%)

TABLE P-2.4
RESIDENTIAL EXPANDED BLUE BOX SYSTEM
REGION OF DURHAM
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Durham

SYSTEM: Expanded Blue Box

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> • as per Existing/Committed System Expanded Blue Box • proven to contribute to increased waste diversion and has shown to be reliable in pilot and full scale projects 	<ul style="list-style-type: none"> • Expanded Blue Box is a reliable system that could be implemented in Durham • it has been proven and is not dependent only on a single approach 	<u>Disadvantages</u> <ul style="list-style-type: none"> • extensive promotion/education required to support effective participation • still relies on willingness of residents to participate
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> • as per Existing/Committed System • Expanded Blue Box relies on Expanded list of dry materials collected and on promotion and education to encourage effective participation • reliability is enhanced by combining several approaches (including collection of expanded list of recyclables at depots, extensive backyard composting etc.) 		

TABLE P-2.4
RESIDENTIAL EXPANDED BLUE BOX SYSTEM
REGION OF DURHAM
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Durham
 SYSTEM: Expanded Blue Box

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accepted	<ul style="list-style-type: none"> flexibility gained through expanded range of dry materials accepted for curbside collection and at depots, and extensive distribution of backyard composters new processing facility would be required to accommodate increased range and quantity 	<ul style="list-style-type: none"> Expanded Blue Box modifies and enhances Existing System requires change in curbside collection of recyclables expands range of materials collected and results in greater quantities of waste diverted 	<u>Advantages</u> <ul style="list-style-type: none"> enhances Existing System by collecting wider range of greater quantity materials builds on Existing System behaviour/practices for dry materials <u>Disadvantages</u> <ul style="list-style-type: none"> may require capital expenditures for material processing facilities likely requires switch to weekly curbside collection of recyclables limited diversion of food waste (only through backyard composters, on-site composting and reuse)
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> compatible with most elements of Existing System would require using existing or modified systems in the region (collection and processing systems for dry materials would require expansion/modification but the approaches would remain similar) continue to promote backyard composting Region of Durham would need to switch from bi-weekly to weekly blue box collection 		

TABLE P-2.4
RESIDENTIAL EXPANDED BLUE BOX SYSTEM
REGION OF DURHAM
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Durham
 SYSTEM: Expanded Blue Box

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 44% residential waste diversion possible • an estimated 47% diversion possible with source reduction included 	<ul style="list-style-type: none"> • an estimated additional 14% diversion over Existing/Committed System 	<u>Advantages</u> <ul style="list-style-type: none"> • residential waste diversion increased significantly beyond Existing/System <u>Disadvantages</u> <ul style="list-style-type: none"> • limited diversion of food waste (30%)

TABLE P-2.5
RESIDENTIAL WET/DRY SYSTEM
REGION OF DURHAM
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Durham

SYSTEM: Wet/Dry

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> • technology is proven in pilot scale projects in Ontario and at full scale in Europe • technical problems with processing (e.g. compost) still exist • compost quality is still a problem • low levels of participation experienced in some projects 	<ul style="list-style-type: none"> • system considered reliable in some jurisdictions (not yet in Ontario) • incorporates combination of several alternative approaches • potential for odours from composting plants can be mitigated through appropriate start-up procedures, careful monitoring and effective technology • effective source separation required for reliability can be encouraged through extensive promotion/education 	<u>Advantages</u> <ul style="list-style-type: none"> • technology well-developed in Europe • potential for system breakdown is minimal and can be mitigated with public use of other diversion techniques <u>Disadvantages</u> <ul style="list-style-type: none"> • effect of failure is significant as primary collection of all materials through one system • not proven at full scale in North America • relies on public willingness to participate requiring extensive promotion/education
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> • Wet/Dry relies on a single approach (i.e. two or three stream collection) for garbage, dry recyclables and organics collection. Other 3Rs components are incorporated providing backup/alternatives in event of failure and to provide additional options (e.g. depots, backyard composting) • relies on willingness of residents to participate 		

**TABLE P-2.5
RESIDENTIAL WET/DRY SYSTEM
REGION OF DURHAM
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Durham
SYSTEM: Wet/Dry

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accepted	<ul style="list-style-type: none"> flexibility gained by expanding range of dry materials collected curbside resulting in greater quantities collected allows collection of wet household waste - significantly increasing diversion of food 	<ul style="list-style-type: none"> increased flexibility gained through collection of expanded range of dry materials and household organics a new MRF or expanded existing MRF would be required to enhance system flexibility and accommodate increased quantities of dry recyclables 	<u>Advantages</u> <ul style="list-style-type: none"> collection of wider range and greater quantity of materials at curbside including food waste elements of Existing System maintained (eg. backyard composting)
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> requires fundamental change in Existing System to two or three stream collection - new equipment and modified behaviour relies on some elements of Existing System (eg. backyard compost for further diversion) 	<ul style="list-style-type: none"> new centralized composting facility (probably in-vessel) would be required modified behaviour required but based on source separation 	<u>Disadvantages</u> <ul style="list-style-type: none"> will require substantial new facilities will require modified behaviour of residents

TABLE P-2.5
RESIDENTIAL WET/DRY SYSTEM
REGION OF DURHAM
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Durham

SYSTEM: Wet/Dry

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 56% residential waste diversion possible • an estimated 59% diversion possible with source reduction included 	<ul style="list-style-type: none"> • an additional 26% diversion achievable beyond Existing/Committed System 	<u>Advantage</u> <ul style="list-style-type: none"> • significantly increased diversion beyond Existing/Committed system including significant diversion of food waste (74%) <u>Disadvantage</u> <ul style="list-style-type: none"> • some assumptions on waste diversion somewhat uncertain (because system has not been proven at full scale in Ontario).

TABLE P-2.6
RESIDENTIAL MIXED WASTE PROCESSING SYSTEM
REGION OF DURHAM
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Durham
 SYSTEM: Mixed Waste Processing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> Mixed Waste Processing composting not yet proven widely successful or reliable due to operational problems and poor compost quality 	<ul style="list-style-type: none"> Mixed Waste Processing system is not considered highly reliable but may be used as an add-on to an existing/committed system technology not proven to be widely successful 	<u>Advantages</u> <ul style="list-style-type: none"> potential for processing all waste remaining after backyard composting and recycling of other materials without reliance on participation of public in source separation <u>Disadvantages</u> <ul style="list-style-type: none"> experience has shown processing may fail due to operational problems and product quality - recyclables and compost
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> reliability limited by dependence on single processing facility for "third bag" waste handles all recyclables and organics without reliance on willingness of residents to participate in source separation 		

TABLE P-2.6
RESIDENTIAL MIXED WASTE PROCESSING SYSTEM
REGION OF DURHAM
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Durham
 SYSTEM: Mixed Waste Processing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accepted	<ul style="list-style-type: none"> • very flexible as it may process all waste remaining after some source separation • quality of secondary materials and compost from mixed waste processing not as high as source separated materials 	<ul style="list-style-type: none"> • Mixed Waste Processing offers flexibility to increase range and quantity of materials accepted (since all material processed) though product quality is not considered as dependable • the system is partially compatible with existing collection systems but may discourage source separation (existing waste management policy) which achieves diversion by producing highest quality materials 	<u>Advantages</u> <ul style="list-style-type: none"> • increase in waste diversion through processing all waste and through mass reduction in composting process • significant increase in diversion of organics beyond Existing/Committed System <u>Disadvantages</u> <ul style="list-style-type: none"> • value of recyclables may not be as high • erodes advances in 3Rs promotion/acceptance by public
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> • compatible with most components of Existing/Committed system • conflicts with existing policy to promote participation in source separation • many mixed waste processing facilities exploit waste for refuse derived fuel (RDF) which is not possible in Ontario (due to legislation) • requires new processing plants 		

TABLE P-2.6
RESIDENTIAL MIXED WASTE PROCESSING SYSTEM
REGION OF DURHAM
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Durham
 SYSTEM: Mixed Waste Processing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated residential diversion of between 60% and 77% depending on whether compost must be landfilled due to poor quality or whether it can be marketed (respectively) • if possible source reduction is included, the diversion potential is estimated to be in the range of 63% to 80% for these two scenarios respectively 	<ul style="list-style-type: none"> • an additional diversion of between 30% and 47% beyond Existing/Committed System depending on whether compost is landfilled due to poor quality or whether it is marketed 	<p><u>Advantage</u></p> <ul style="list-style-type: none"> • a significant increase in diversion achieved beyond Existing/Committed System • significant potential diversion of organic waste in particular, food • a portion of waste currently disposed may be processed for diversion <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • performance not widely proven to be reliable • marketability of materials processed in Mixed Waste Processing facility is uncertain

TABLE P-3.1
RESIDENTIAL EXISTING SYSTEM
METRO TORONTO
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Metro
 SYSTEM: Residential Existing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> • technology for all components is proven • some operational problems have been identified which can be mitigated (e.g. odour from compost plants, contamination) • some approaches well-suited for expansion of quantities or range of materials (e.g. reuse centres, depots) and Blue Box for some dry materials 	<ul style="list-style-type: none"> • residential Existing System is considered reliable since it is based on proven technology and relies on the integration of several different approaches for most materials 	<u>Advantages</u> <ul style="list-style-type: none"> • system is reliable; core technology is proven and includes a range of approaches <u>Disadvantage</u> <ul style="list-style-type: none"> • experience has demonstrated some reliability problems (eg. odours at compost) which can be mitigated
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> • system is not dependent on single approach or facility, although processing of dry materials performed at limited number of MRFs – extra capacity can mitigate this 		

**TABLE P-3.1
RESIDENTIAL EXISTING SYSTEM
METRO TORONTO
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Metro
SYSTEM: Residential Existing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accommodated	<ul style="list-style-type: none"> Existing System accepts a limited range and quantity of recyclable materials that are accommodated in existing facilities and approaches some approaches well-suited for expansion of quantities or range of materials (e.g. reuse centres, depots) 	<ul style="list-style-type: none"> Existing System infrastructure has limited flexibility MRFs could handle larger quantity and range of materials collection system (Blue Box) could be modified to handle larger quantity and range of materials 	<u>Advantages</u> <ul style="list-style-type: none"> most elements of system could be expanded to be more flexible <u>Disadvantages</u> <ul style="list-style-type: none"> flexibility limited by lack of markets for secondary materials and size of existing MRFs very limited flexibility for diversion of food waste
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> not applicable 		

**TABLE P-3.1
RESIDENTIAL EXISTING SYSTEM
METRO TORONTO
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Metro
SYSTEM: Residential Existing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 19% residential waste diversion achieved in Metro Toronto • an estimated 22% diversion with source reduction included 	<ul style="list-style-type: none"> • diversion quantities from residential waste stream will not meet Ontario targets 	<u>Disadvantages</u> <ul style="list-style-type: none"> • at best, 78% of waste continues to be landfilled

TABLE P-3.2
RESIDENTIAL EXISTING/COMMITTED SYSTEM
METRO TORONTO
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Metro

SYSTEM: Residential Existing/Committed

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> • most technology and systems for waste diversion have proven to be effective • some elements (eg. composting) require technical improvements or piloting and perfection (eg. multi-family recycling) • mandatory legislation requiring recycling and other diversion services proven to contribute to waste diversion 	<ul style="list-style-type: none"> • most elements of system are proven to be reliable • system is not prone to failure by being reliant on a single approach • most technological elements have been proven • 3Rs legislation may enhance reliability 	<u>Advantages</u> <ul style="list-style-type: none"> • as per Existing System • 3Rs legislation may enhance reliance on voluntary recycling <u>Disadvantages</u> <ul style="list-style-type: none"> • some technical difficulties with individual components require attention (e.g. composting and multi-family recycling) • still relies on willingness of residents to participate
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> • combines several approaches to achieve higher waste diversion • 3Rs legislation may enhance reliance or voluntary recycling 		

TABLE P-3.2
RESIDENTIAL EXISTING/COMMITTED SYSTEM
METRO TORONTO
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Metro
 SYSTEM: Residential Existing/Committed

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accommodated	<ul style="list-style-type: none"> • new MRF will facilitate processing increased quantities (from apartments etc.) • no significant change in types or quantities of material accepted • limited flexibility to divert food waste 	<ul style="list-style-type: none"> • collection system is flexible and increased quantities of materials could be accepted • Existing/Committed system is compatible and expands on Existing System • processing capacity is being expanded 	<u>Advantages</u> <ul style="list-style-type: none"> • no significant changes needed to Existing System <u>Disadvantages</u> <ul style="list-style-type: none"> • new collection system required to facilitate centralized composting • limited flexibility to divert food waste
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> • Metro's Existing/Committed program calls only for new backyard composters and new large scale drop-off depots at landfills, in addition to existing components • existing collection system not compatible with new centralized composting facility. 		

TABLE P-3.2
RESIDENTIAL EXISTING/COMMITTED SYSTEM
METRO TORONTO
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Metro

SYSTEM: Residential Existing/Committed

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 21% residential waste diversion achievable • an estimated 24% waste diversion with source reduction included 	<ul style="list-style-type: none"> • an additional 2% of residential waste stream diverted (beyond Existing System) 	<u>Advantages</u> <ul style="list-style-type: none"> • 21%-24% waste diversion achievable <u>Disadvantages</u> <ul style="list-style-type: none"> • 21%-24% diversion of residential not significant increase beyond Existing System

TABLE P-3.3
RESIDENTIAL DIRECT COST SYSTEM
METRO REGION
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Metro

SYSTEM: Direct Cost

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> • as per Existing/Committed System • Direct Cost System proven to contribute to increase waste diversion 	<ul style="list-style-type: none"> • system is reliable • relies on single approach of pay-by-the-bag levy, which is proven to contribute to diversion. Also, a reliable range of diversion opportunities exist to make system reliable 	<u>Advantages</u> <ul style="list-style-type: none"> • Direct Cost approach is a simple incentive increasing residents willingness to decrease waste disposal through increased diversion and possibly source reduction • still exploits a combination of proven approaches and extends backyard composting option <u>Disadvantages</u> <ul style="list-style-type: none"> • may increase illegal dumping of wastes but with monitoring and promotion this can be minimized
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> • Direct Cost System relies on relatively simple pay-by-the-bag levy (other mechanisms also possible) to provide additional incentive for diversion • Diversion system relies on reliable range of approaches as per Existing/Committed System 		

**TABLE P-3.3
RESIDENTIAL DIRECT COST SYSTEM
METRO REGION
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Metro
SYSTEM: Direct Cost

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accommodated	<ul style="list-style-type: none"> no significant change in types of materials from Existing/Committed system quantities of recyclable materials collected are likely to rise, requiring modified operation or increased capacity of facilitation and collection system 	<ul style="list-style-type: none"> system designed to handle and could be expanded to accommodate increased quantities of materials builds on Existing System; does not require fundamental change Metro has significant number of multi-family buildings which are not as readily affected by Direct Cost System 	<u>Advantages</u> <ul style="list-style-type: none"> simple incentive to increase quantity of material diverted builds on Existing Systems and infrastructure and extends backyard composter option not reliant on increasing range of materials but may do so
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> compatible with Existing System Direct Cost System uses Existing Systems and infrastructure may require additional collection capacity and shift to weekly collection of recyclables may require expansion of composting and dry processing facilities 		<u>Disadvantages</u> <ul style="list-style-type: none"> may require expansion/modification of existing processing facilities and collection system to handle increased quantities Metro has significant number of multi-family buildings which are not as reading affected by Direct Cost System

**TABLE P-3.3
RESIDENTIAL DIRECT COST SYSTEM
METRO REGION
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Metro
SYSTEM: Direct Cost

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 29% residential waste diversion possible • an estimated 32% diversion possible with source reduction included (source reduction may be greater due to effect specifically from Direct Cost System - not quantified due to limited available date) 	<ul style="list-style-type: none"> • an estimated additional 8% diversion over Existing/Committed System possible 	<u>Advantages</u> <ul style="list-style-type: none"> • increased residential waste diversion • Direct Cost now also encourage greater source reduction <u>Disadvantages</u> <ul style="list-style-type: none"> • potential for illegal dumping of waste • not all effects of Direct Cost System adequately documented to quantify reliably • limited diversion of food waste (19%)

TABLE P-3.4
RESIDENTIAL EXPANDED BLUE BOX SYSTEM
METRO TORONTO
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Metro

SYSTEM: Expanded Blue Box

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> • as per Existing/Committed System Expanded Blue Box • proven to contribute to increased waste diversion and has shown to be reliable in pilot and full scale projects 	<ul style="list-style-type: none"> • Expanded Blue Box is a reliable system that could be implemented in Metro • it has been proven and is not dependent only on a single approach 	<u>Disadvantages</u> <ul style="list-style-type: none"> • extensive promotion/education required to support effective participation • still relies on willingness of residents to participate
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> • as per Existing/Committed System • Expanded Blue Box relies on Expanded list of dry materials collected and on promotion and education to encourage effective participation • reliability is enhanced by combining several approaches (including depot collection of expanded list of recyclables at depots, extensive backyard composting etc.) 		

**TABLE P-3.4
RESIDENTIAL EXPANDED BLUE BOX SYSTEM
METRO TORONTO
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Metro
SYSTEM: Expanded Blue Box

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accommodated	<ul style="list-style-type: none"> flexibility gained through expanded range of dry materials accepted for curbside collection and at depots, and extensive distribution of backyard composters new processing facility would be required to accommodate increased range and quantity 	<ul style="list-style-type: none"> Expanded Blue Box modifies and enhances Existing System requires change in curbside collection of recyclables expands range of materials collected and results in greater quantities of waste diverted 	<u>Advantages</u> <ul style="list-style-type: none"> enhances Existing System by collecting wider range of greater quantity materials builds on Existing System behaviour/practices for dry materials
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> compatible with most elements of Existing System would require using existing or modified systems in the region (collection and processing systems for dry materials would require expansion/modification but the approaches would remain similar) continue to promote backyard composting 		<u>Disadvantages</u> <ul style="list-style-type: none"> may require capital expenditures for material processing facilities likely requires switch to weekly curbside collection of recyclables limited diversion of food waste (only through backyard composters, on-site composting and reuse)

**TABLE P-3.4
RESIDENTIAL EXPANDED BLUE BOX SYSTEM
METRO TORONTO
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Metro
SYSTEM: Expanded Blue Box

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 33% residential waste diversion possible • an estimated 36% diversion possible with source reduction included 	<ul style="list-style-type: none"> • an estimated additional 12% diversion over Existing/Committed System possible 	<u>Advantages</u> <ul style="list-style-type: none"> • residential waste diversion increased significantly beyond Existing/System <u>Disadvantages</u> <ul style="list-style-type: none"> • limited diversion of food waste (17%)

**TABLE P-3.5
RESIDENTIAL WET/DRY SYSTEM
METRO TORONTO
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Metro
SYSTEM: Wet/Dry

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> • technology is proven in pilot scale projects in Ontario and at full scale in Europe • technical problems with processing (e.g. compost) still exist • compost quality is still a problem • low levels of participation experienced in some projects 	<ul style="list-style-type: none"> • system considered reliable in some jurisdictions (not yet in Ontario) • incorporates combination of several alternative approaches • potential for odours from composting plants can be mitigated through appropriate start-up procedures, careful monitoring and effective technology • effective source separation required for reliability can be encouraged through extensive promotion/education 	<u>Advantages</u> <ul style="list-style-type: none"> • technology well-developed in Europe • potential for system breakdown is minimal and can be mitigated with public use of other diversion techniques <u>Disadvantages</u> <ul style="list-style-type: none"> • effect of failure is significant as primary collection of all materials through one system • not proven at full scale in North America • relies on public willingness to participate requiring extensive promotion/education
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> • Wet/Dry relies on a single approach (i.e. two or three stream collection) for garbage, dry recyclables and organics collection. Other 3Rs components are incorporated providing backup/alternatives in event of failure and to provide additional options (e.g. depots, backyard composting) • relies on willingness of residents to participate 		

TABLE P-3.5
RESIDENTIAL WET/DRY SYSTEM
METRO TORONTO
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Metro

SYSTEM: Wet/Dry

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accommodated	<ul style="list-style-type: none"> flexibility gained by expanding range of dry materials collected curbside resulting in greater quantities collected allows collection of wet household waste - significantly increasing diversion of food 	<ul style="list-style-type: none"> increased flexibility gained through collection of expanded range of dry materials and household organics a new MRF or expanded existing MRF would be required to enhance system flexibility and accommodate increased quantities of dry recyclables 	<u>Advantages</u> <ul style="list-style-type: none"> collection of wider range and greater quantity of materials at curbside including food waste elements of Existing System maintained (eg. backyard composting)
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> requires fundamental change in Existing System to two or three stream collection - new equipment and modified behaviour relies on some elements of Existing System (eg. backyard compost for further diversion) 	<ul style="list-style-type: none"> new centralized composting facility (probably in-vessel) would be required modified behaviour required but based on source separation 	<u>Disadvantages</u> <ul style="list-style-type: none"> will require substantial new facilities will require modified behaviour of residents

**TABLE P-3.5
RESIDENTIAL WET/DRY SYSTEM
METRO TORONTO
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Metro
SYSTEM: Wet/Dry

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 44% residential waste diversion possible • an estimated 47% diversion possible with source reduction included 	<ul style="list-style-type: none"> • an additional 23% diversion achievable beyond Existing/Committed System 	<p><u>Advantage</u></p> <ul style="list-style-type: none"> • significantly increased diversion beyond Existing/Committed system including significant diversion of food waste (60%) <p><u>Disadvantage</u></p> <ul style="list-style-type: none"> • some assumptions on waste diversion somewhat uncertain (because system has not been proven at full scale in Ontario).

TABLE P-3.6
RESIDENTIAL MIXED WASTE PROCESSING SYSTEM
METRO TORONTO
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Metro
 SYSTEM: Mixed Waste Processing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> Mixed Waste Processing composting not yet proven widely successful or reliable due to operational problems and poor compost quality 	<ul style="list-style-type: none"> Mixed Waste Processing system is not considered highly reliable but may be used as an add-on to an Existing/Committed system technology not proven to be widely successful 	<u>Advantages</u> <ul style="list-style-type: none"> potential for processing all waste remaining after backyard composting and recycling of other materials without reliance on participation of public in source separation <u>Disadvantages</u> <ul style="list-style-type: none"> experience has shown processing may fail due to operational problems and product quality - recyclables and compost
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> reliability limited by dependence on large processing facilities for "third bag" waste handles all recyclables and organics without reliance on willingness of residents to participate in source separation 		

TABLE P-3.6
RESIDENTIAL MIXED WASTE PROCESSING SYSTEM
METRO TORONTO
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Metro

SYSTEM: Mixed Waste Processing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accommodated	<ul style="list-style-type: none"> • very flexible as it may process all waste remaining after some source separation • quality of secondary materials and compost from mixed waste processing not as high as source separated materials 	<ul style="list-style-type: none"> • Mixed Waste Processing offers flexibility to increase range and quantity of materials accepted (since all material processed) though product quality is not considered as dependable • the system is partially compatible with existing collection systems but may discourage source separation (existing waste management policy) which achieves diversion by producing highest quality materials 	<u>Advantages</u> <ul style="list-style-type: none"> • increase in waste diversion through processing all waste and through mass reduction in composting process • significant increase in diversion of organics beyond Existing/Committed System <u>Disadvantages</u> <ul style="list-style-type: none"> • value of recyclables may not be as high • erodes advances in 3Rs promotion/acceptance by public
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> • compatible with most components of Existing/Committed system • conflicts with existing policy to promote participation in source separation • many mixed waste processing facilities exploit waste for refuse derived fuel (RDF) which is not possible in Ontario (due to legislation) • requires new processing plants 		

TABLE P-3.6
RESIDENTIAL MIXED WASTE PROCESSING SYSTEM
METRO TORONTO
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Metro

SYSTEM: Mixed Waste Processing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated residential diversion of between 52% and 72% depending on whether compost must be landfilled due to poor quality or whether it can be marketed (respectively) • if possible source reduction is included, the diversion potential is estimated to be in the range of 57% to 77% for these two scenarios respectively 	<ul style="list-style-type: none"> • an additional diversion of between 31% and 51% beyond Existing/Committed System depending on whether compost is landfilled due to poor quality or whether it is marketed 	<u>Advantage</u> <ul style="list-style-type: none"> • a significant increase in diversion achieved beyond Existing/Committed System • significant potential diversion of organic waste in particular, food • a portion of waste currently disposed may be processed for diversion <u>Disadvantages</u> <ul style="list-style-type: none"> • performance not widely proven to be reliable • marketability of materials processed in Mixed Waste Processing facility is uncertain

**TABLE P-4.1
RESIDENTIAL EXISTING SYSTEM
REGION OF YORK
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: York
SYSTEM: Residential Existing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> technology for all components are proven some operational problems have been identified which can be mitigated (e.g. odour from compost plants, contamination) 	<ul style="list-style-type: none"> residential Existing System is considered reliable since it is based on proven technology and relies on the integration of several different approaches for most materials 	<u>Advantages</u> <ul style="list-style-type: none"> system is reliable; core technology is proven and includes a range of approaches
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> system is not dependent on single approach or facility, although processing of dry materials performed at only one MRF 		<u>Disadvantages</u> <ul style="list-style-type: none"> experience has demonstrated some reliability problems (e.g. odours at compost) which can be mitigated

**TABLE P-4.1
RESIDENTIAL EXISTING SYSTEM
REGION OF YORK
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: York
SYSTEM: Residential Existing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accommodated	<ul style="list-style-type: none"> Existing System accepts a limited range and quantity of recyclable materials that are accommodated in existing facilities and approaches ranges and quantities are expanding in partially expanded Blue Box program and depots other approaches also well-suited for expansion (e.g. reuse centres, depots) 	<ul style="list-style-type: none"> Existing System infrastructure has limited flexibility collection system (Blue Box) can handle larger quantity and range of materials 	<u>Advantages</u> <ul style="list-style-type: none"> most elements of system could be expanded to be more flexible <u>Disadvantages</u> <ul style="list-style-type: none"> flexibility limited by lack of markets for secondary materials and size of existing MRF very limited flexibility for diversion of food waste
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> not applicable 		

**TABLE P-4.1
RESIDENTIAL EXISTING SYSTEM
REGION OF YORK
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: York
SYSTEM: Residential Existing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 28% residential waste diversion achieved in York • an estimated 31% diversion with source reduction included 	<ul style="list-style-type: none"> • diversion quantities from residential waste stream will not meet Ontario targets 	<u>Disadvantages</u> <ul style="list-style-type: none"> • an estimated 69% of waste continues to be landfilled

TABLE P-4.2
RESIDENTIAL EXISTING/COMMITTED SYSTEM
YORK REGION
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: York

SYSTEM: Residential Existing/Committed

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> • most technology and systems for waste diversion have proven to be effective • mandatory recycling legislation proven to contribute to waste diversion 	<ul style="list-style-type: none"> • most elements of system are proven to be reliable • system is not prone to failure by being reliant on a single approach • most technological elements have been proven • 3Rs legislation may enhance reliability 	<u>Advantages</u> <ul style="list-style-type: none"> • as per Existing System • 3Rs regulations may enhance reliance on voluntary recycling <u>Disadvantages</u> <ul style="list-style-type: none"> • as per Existing System • still relies on willingness residents to participate
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> • combines several approaches to achieve higher waste diversion • 3Rs legislation may enhance reliance on voluntary recycling 		

TABLE P-4.2
RESIDENTIAL EXISTING/COMMITTED SYSTEM
YORK REGION
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: York
 SYSTEM: Residential Existing/Committed

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accommodated	<ul style="list-style-type: none"> • limited capacity of new MRF for handling additional quantities of material • no significant change in types or quantities of material accepted • limited flexibility to divert food waste 	<ul style="list-style-type: none"> • collection system can handle increased quantities of materials but would require coordinating the several different private haulers contracted by the individual municipalities to collect their wastes. • Existing/Committed System is compatible and expands on Existing System • processing capacity is being expanded only minimally 	<u>Advantages</u> <ul style="list-style-type: none"> • no significant changes needed to existing collection system, although increased coordination required <u>Disadvantages</u> <ul style="list-style-type: none"> • additional quantities require new processing facility or altered systems in existing MRF • limited flexibility to divert food waste
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> • Region's Existing/Committed program calls only for new backyard composters in addition to expansion of HHW program and minimal centralized composting for residential waste. • expanding Existing Systems (eg.Igloo) 		

TABLE P-4.2
RESIDENTIAL EXISTING/COMMITTED SYSTEM
YORK REGION
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: York

SYSTEM: Residential Existing/Committed

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 29% residential waste diversion achievable • an estimated 32% waste diversion with source reduction included 	<ul style="list-style-type: none"> • an additional 1% of residential waste stream diverted (beyond Existing System) 	<u>Advantages</u> <ul style="list-style-type: none"> • 29%-32% waste diversion achievable <u>Disadvantages</u> <ul style="list-style-type: none"> • 29%-32% diversion of residential waste stream not significantly better than Existing System

TABLE P-4.3
RESIDENTIAL DIRECT COST SYSTEM
YORK REGION
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: York
 SYSTEM: Direct Cost

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> • as per Existing/Committed System • Direct Cost system proven to contribute to increasing waste diversion 	<ul style="list-style-type: none"> • system is reliable • relies on single approach of pay-by-the-bag levy, which is proven to contribute to diversion. Also, a reliable range of diversion opportunities exist to make system reliable 	<u>Advantages</u> <ul style="list-style-type: none"> • Direct Cost approach is a simple incentive increasing residents willingness to decrease waste disposal through increased diversion and possibly source reduction • still exploits a combination of proven approaches and extends backyard composting option <u>Disadvantages</u> <ul style="list-style-type: none"> • may increase illegal dumping of wastes but with monitoring and promotion this can be minimized
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> • Direct Cost System relies on relatively simple pay-by-the-bag levy (other mechanisms also possible) to provide additional incentive for diversion • Diversion system relies on reliable range of approaches as per Existing/Committed System 		

**TABLE P-4.3
RESIDENTIAL DIRECT COST SYSTEM
YORK REGION
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: York
SYSTEM: Direct Cost

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accommodated	<ul style="list-style-type: none"> no significant change in types of materials from Existing/Committed system quantities collected are likely to rise, requiring modified operation or increased capacity of facilities and collection systems 	<ul style="list-style-type: none"> system designed to handle and could be expanded to accommodate increased quantities of materials builds on Existing System; does not require fundamental change 	<u>Advantages</u> <ul style="list-style-type: none"> simple incentive to increase quantity of material diverted builds on Existing Systems and infrastructure and extends backyard composter option not reliant on increasing range of materials but may do so
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> compatible with Existing System Direct Cost System uses Existing Systems and infrastructure may require additional collection capacity and shift to weekly collection of recyclables may require expansion of composting and dry processing facilities expanded MRF would be required collection would have to be organized among many different haulers. 		<u>Disadvantages</u> <ul style="list-style-type: none"> limited flexibility to divert food waste - backyard composting/multi-family on-site composting only may require expansion/modification of existing processing facilities and collection systems to handle increased quantities may require a revised collection schedule or additional trucks to accommodate increased quantities of recyclables

**TABLE P-4.3
RESIDENTIAL DIRECT COST SYSTEM
YORK REGION
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: York

SYSTEM: Direct Cost

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 43% residential waste diversion possible • an estimated 46% waste diversion possible with source reduction included (source reduction may be greater due to effect specifically from Direct Cost System - not quantified due to lack of reliable data) 	<ul style="list-style-type: none"> • an estimated additional 14% diversion beyond Existing/Committed System possible 	<u>Advantages</u> <ul style="list-style-type: none"> • increased residential waste diversion • builds readily on Existing/Committed System • Direct Cost may also encourage greater source reduction <u>Disadvantages</u> <ul style="list-style-type: none"> • potential for illegal dumping of waste • not all effects of Direct Cost adequately documented to quantify reliably • limited diversion of food waste (28%)

TABLE P-4.4
RESIDENTIAL EXPANDED BLUE BOX SYSTEM
REGION OF YORK
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: York
 SYSTEM: Expanded Blue Box

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> • as per Existing/Committed System • Expanded Blue Box is proven to contribute to waste diversion and has shown to be reliable in pilot and full scale projects • Markham is successfully collecting expanded range of materials through its depot system 	<ul style="list-style-type: none"> • Expanded Blue Box is a reliable system that could be implemented in York • it has been proven and is not dependent only on a single approach 	<u>Disadvantages</u> <ul style="list-style-type: none"> • extensive promotion/education required to support effective participation • still relies on willingness of residents to participate
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> • as per Existing/Committed System • Expanded Blue Box relies on Expanded list of dry materials collected and on promotion and education to encourage effective participation • reliability is enhanced by combining several approaches (including depot collection of expanded list of recyclables at depots, extensive backyard composting etc.) 		

TABLE P-4.4
RESIDENTIAL EXPANDED BLUE BOX SYSTEM
REGION OF YORK
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: York

SYSTEM: Expanded Blue Box

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accommodated	<ul style="list-style-type: none"> flexibility gained through expanded range of dry materials accepted for curbside collection and at depots, and extensive distribution of backyard composters new processing facility would be required to accommodate increased range and quantity 	<ul style="list-style-type: none"> Expanded Blue Box modifies and enhances Existing System requires change in curbside collection of recyclables expands range of materials collected and results in greater quantities of waste diverted 	<u>Advantages</u> <ul style="list-style-type: none"> enhances Existing System by collecting wider range of greater quantity materials builds on Existing System behaviour/practices for dry materials
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> compatible with most elements of Existing System would require using existing or modified systems in the region (collection and processing systems for dry materials would require expansion/modification but the approaches would remain similar) continue to promote backyard composting 		<u>Disadvantages</u> <ul style="list-style-type: none"> may require capital expenditures for material processing facilities likely requires switch to weekly curbside collection of recyclables limited diversion of food waste (only through backyard composters and on-site composting, reuse)

TABLE P-4.4
RESIDENTIAL EXPANDED BLUE BOX SYSTEM
REGION OF YORK
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: York

SYSTEM: Expanded Blue Box

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 44% residential waste diversion possible • an estimated 47% diversion possible with source reduction included 	<ul style="list-style-type: none"> • an estimated additional 15% diversion over Existing/Committed System possible 	<u>Advantages</u> <ul style="list-style-type: none"> • residential waste diversion increased significantly beyond Existing/System <u>Disadvantages</u> <ul style="list-style-type: none"> • limited diversion of food waste (25%)

TABLE P-4.5
RESIDENTIAL WET/DRY SYSTEM
REGION OF YORK
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: York
 SYSTEM: Wet/Dry

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> • technology is proven in pilot scale projects in Ontario and at full scale in Europe • technical problems with processing (e.g. compost) still exist • compost quality is still a problem • low levels of participation experienced in some projects 	<ul style="list-style-type: none"> • system considered reliable in some jurisdictions (not yet in Ontario) • incorporates combination of several alternative approaches • potential for odours from composting plants can be mitigated through appropriate start-up procedures, careful monitoring and effective technology • effective source separation required for reliability can be encouraged through extensive promotion/education 	<u>Advantages</u> <ul style="list-style-type: none"> • technology well-developed in Europe • potential for system breakdown is minimal and can be mitigated with public use of other diversion techniques <u>Disadvantages</u> <ul style="list-style-type: none"> • effect of failure is significant as primary collection of all materials through one system • not proven at full scale in North America • relies on public willingness to participate requiring extensive promotion/education
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> • Wet/Dry relies on a single approach (i.e. two or three stream collection) for garbage, dry recyclables and organics collection. Other 3Rs components are incorporated providing backup/alternatives in event of failure and to provide additional options (e.g. depots, backyard composting) • relies on willingness of residents to participate 		

**TABLE P-4.5
RESIDENTIAL WET/DRY SYSTEM
REGION OF YORK
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: York
SYSTEM: Wet/Dry

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accommodated	<ul style="list-style-type: none"> flexibility gained by expanding range of dry materials collected curbside resulting in greater quantities collected allows collection of wet household waste - significantly increasing diversion of food 	<ul style="list-style-type: none"> increased flexibility gained through collection of expanded range of dry materials and household organics a new MRF or expanded existing MRF would be required to enhance system flexibility and accommodate increased quantities of dry recyclables 	<u>Advantages</u> <ul style="list-style-type: none"> collection of wider range and greater quantity of materials at curbside including food waste elements of Existing System maintained (eg. backyard composting)
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> requires fundamental change in Existing System to two or three stream collection - new equipment and modified behaviour relies on some elements of Existing System (eg. backyard compost for further diversion) 	<ul style="list-style-type: none"> new centralized composting facility (probably in-vessel) would be required modified behaviour required but based on source separation 	<u>Disadvantages</u> <ul style="list-style-type: none"> will require substantial new facilities will require modified behaviour of residents

**TABLE P-4.5
RESIDENTIAL WET/DRY SYSTEM
REGION OF YORK
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: York
SYSTEM: Wet/Dry

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 57% residential waste diversion possible • an estimated 60% diversion possible with source reduction included 	<ul style="list-style-type: none"> • an additional 28% diversion achievable beyond Existing/Committed System 	<p><u>Advantage</u></p> <ul style="list-style-type: none"> • significantly increased diversion beyond Existing/Committed system including significant diversion of food waste (75%) <p><u>Disadvantage</u></p> <ul style="list-style-type: none"> • some assumptions on waste diversion somewhat uncertain (because system has not been proven at full scale in Ontario).

TABLE P-4.6
RESIDENTIAL MIXED WASTE PROCESSING SYSTEM
REGION OF YORK
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: York

SYSTEM: Mixed Waste Processing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> Mixed Waste Processing composting not yet proven widely successful or reliable due to operational problems and poor compost quality 	<ul style="list-style-type: none"> Mixed Waste Processing system is not considered highly reliable but may be used as an add-on to an existing/committed system technology not proven to be widely successful 	<u>Advantages</u> <ul style="list-style-type: none"> potential for processing all waste remaining after backyard composting and recycling of other materials without reliance on participation of public in source separation <u>Disadvantages</u> <ul style="list-style-type: none"> experience has shown processing may fail due to operational problems and product quality - recyclables and compost
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> reliability limited by dependence on single processing facility for "third bag" waste handles all recyclables and organics without reliance on willingness of residents to participate in source separation 		

TABLE P-4.6
RESIDENTIAL MIXED WASTE PROCESSING SYSTEM
REGION OF YORK
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: York
 SYSTEM: Mixed Waste Processing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accommodated	<ul style="list-style-type: none"> • very flexible as it may process all waste remaining after some source separation • quality of secondary materials and compost from mixed waste processing not as high as source separated materials 	<ul style="list-style-type: none"> • Mixed Waste Processing offers flexibility to increase range and quantity of materials accepted (since all material processed) though product quality is not considered as dependable • the system is partially compatible with existing collection systems but may discourage source separation (existing waste management policy) which achieves diversion by producing highest quality materials 	<u>Advantages</u> <ul style="list-style-type: none"> • increase in waste diversion through processing all waste and through mass reduction in composting process • significant increase in diversion of organics beyond Existing/Committed System
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> • compatible with most components of Existing/Committed system • conflicts with existing policy to promote participation in source separation • many mixed waste processing facilities exploit waste for refuse derived fuel (RDF) which is not possible in Ontario (due to legislation) • requires new processing plants 		<u>Disadvantages</u> <ul style="list-style-type: none"> • value of recyclables may not be as high • erodes advances in 3Rs promotion/acceptance by public

TABLE P-4.6
RESIDENTIAL MIXED WASTE PROCESSING SYSTEM
REGION OF YORK
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Y o r k

SYSTEM: Mixed Waste Processing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator:			
Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated residential diversion of between 59% and 77% depending on whether compost must be landfilled due to poor quality or whether it can be marketed (respectively) • if possible source reduction is included, the diversion potential is estimated to be in the range of 64% to 82% for these two scenarios respectively 	<ul style="list-style-type: none"> • an additional diversion of between 30% and 48% beyond Existing/Committed System depending on whether compost is landfilled due to poor quality or whether it is marketed 	<p><u>Advantage</u></p> <ul style="list-style-type: none"> • a significant increase in diversion achieved beyond Existing/Committed System • significant potential diversion of organic waste in particular, food • a portion of waste currently disposed may be processed for diversion <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • performance not widely proven to be reliable • marketability of materials processed in Mixed Waste Processing facility is uncertain

**TABLE P-5.1
RESIDENTIAL EXISTING SYSTEM
REGION OF PEEL
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Peel
SYSTEM: Residential Existing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> technology for all components are proven some operational problems have been identified which can be mitigated (e.g. odour from compost plants, contamination) 	<ul style="list-style-type: none"> residential Existing System is considered reliable since it is based on proven technology and relies on the integration of several different approaches for most materials 	<u>Advantages</u> <ul style="list-style-type: none"> system is reliable; core technology is proven and includes a range of approaches <u>Disadvantage</u> <ul style="list-style-type: none"> experience has demonstrated some reliability problems (eg. odours at compost) which can be mitigated
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> system is not dependent on single approach or facility although processing of dry materials performed at limited number of MRFs. Extra capacity can mitigate this effect 		

TABLE P-5.1
RESIDENTIAL EXISTING SYSTEM
REGION OF PEEL
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Peel

SYSTEM: Residential Existing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accommodated	<ul style="list-style-type: none"> Existing System accepts a limited range and quantity of recyclable materials that are accommodated in existing facilities and approaches ranges and quantities of materials collected in Blue Box program have been expanded in some areas (e.g. Mississauga) enhancing flexibility some approaches well-suited for expansion of quantities or range of materials (e.g. reuse centres, depots) 	<ul style="list-style-type: none"> Existing System infrastructure has limited flexibility Peel requires a new or expanded MRF to handle larger quantity and range of materials collection system (Blue Box) could be modified to handle larger quantity and range of materials 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> most elements of system could be expanded to be more flexible (e.g. Mississauga already has Expanded Blue Box program) <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> flexibility limited by lack of markets for secondary materials and size of existing MRFs very limited flexibility for diversion of food waste
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> not applicable 		

**TABLE P-5.1
RESIDENTIAL EXISTING SYSTEM
REGION OF PEEL
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Peel

SYSTEM: Residential Existing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 19% residential waste diversion achieved in Peel Region • an estimated 22% diversion with source reduction included 	<ul style="list-style-type: none"> • diversion quantities from residential waste stream will not meet Ontario targets 	<u>Disadvantages</u> <ul style="list-style-type: none"> • at best, 75% of waste continues to be landfilled

TABLE P-5.2
RESIDENTIAL EXISTING/COMMITTED SYSTEM
PEEL REGION
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Peel

SYSTEM: Residential Existing/Committed

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> • most technology and systems for waste diversion have proven to be effective • some elements (eg. composting) require technical improvements or piloting and perfection (eg. multi-family recycling) • mandatory legislation requiring recycling and other diversion services proven to contribute to waste diversion 	<ul style="list-style-type: none"> • most elements of system are proven to be reliable • system is not prone to failure by being reliant on a single approach • most technological elements have been proven • 3Rs legislation may enhance reliability • CRCs and satellite depots provide additional infrastructure and reliability 	<u>Advantages</u> <ul style="list-style-type: none"> • as per Existing System • 3Rs legislation may enhance reliance on voluntary recycling and CRCs provide additional infrastructure <u>Disadvantages</u> <ul style="list-style-type: none"> • some technical difficulties with individual components require attention (e.g. composting and multi-family recycling) • still relies on willingness of residents to participate
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> • combines several approaches to achieve higher waste diversion • 3Rs legislation may enhance reliance on voluntary recycling • community recycling centres and satellite depots provide additional infrastructure and reliability 		

TABLE P-5.2
RESIDENTIAL EXISTING/COMMITTED SYSTEM
PEEL REGION
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Peel
 SYSTEM: Residential Existing/Committed

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accommodated	<ul style="list-style-type: none"> • MRF is presently operating at capacity and a new regional MRF is committed to accommodate increased quantities (from apartments etc.) • no significant change in types or quantities of material accepted • expanded recycling waste collection service with community recycling centres; mini depots and satellite facilities • limited flexibility to divert food waste 	<ul style="list-style-type: none"> • collection system is flexible and increased quantities of materials could be accepted • committed system is compatible and expands Existing System • collection (CRCs/depots) and processing capacity are being expanded 	<u>Advantages</u> <ul style="list-style-type: none"> • no significant changes to Existing collection system required <u>Disadvantages</u> <ul style="list-style-type: none"> • additional quantities require new processing facility or altered systems in existing MRF • limited flexibility to divert food waste
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> • new backyard composters as well as community recycling centres and satellite depots are compatible with Existing System 		

TABLE P-5.2
RESIDENTIAL EXISTING/COMMITTED SYSTEM
PEEL REGION
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Peel
 SYSTEM: Residential Existing/Committed

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 25% residential waste diversion achievable • an estimated 28% waste diversion with source reduction included 	<ul style="list-style-type: none"> • an additional 6% of residential waste stream diverted (beyond Existing System) 	<u>Advantages</u> <ul style="list-style-type: none"> • 25%-28% waste diversion achievable <u>Disadvantages</u> <ul style="list-style-type: none"> • not a significant increase in diversion beyond Existing System

TABLE P-5.3
RESIDENTIAL DIRECT COST SYSTEM
PEEL REGION
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Peel

SYSTEM: Direct Cost

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> • as per Existing/Committed System • Direct Cost system proven to contribute to increasing waste diversion 	<ul style="list-style-type: none"> • system is reliable • relies on single approach of pay-by-the-bag levy, which is proven to contribute to diversion. Also, a reliable range of diversion opportunities exist to make system reliable 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • Direct Cost approach is a simple incentive increasing residents willingness to decrease waste disposal through increased diversion and possibly source reduction • still exploits a combination of proven approaches and extends backyard composting option • community recycling centres and depots provide additional infrastructure to respond to Direct Cost incentive <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • may increase illegal dumping of wastes but with monitoring and promotion this can be minimized
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> • Direct Cost System relies on relatively simple pay-by-the-bag levy (other mechanisms also possible) to provide additional incentive for diversion • Diversion system relies on reliable range of approaches as per Existing/Committed System 		

TABLE P-5.3
RESIDENTIAL DIRECT COST SYSTEM
PEEL REGION
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Peel

SYSTEM: Direct Cost

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accommodated	<ul style="list-style-type: none"> no significant change in types of materials from Existing/Committed system quantities collected are likely to rise, requiring modified operation or increased capacity of facilities and collection systems 	<ul style="list-style-type: none"> system designed to handle and could be expanded to accommodate increased quantities of materials builds on Existing System; does not require fundamental change 	<u>Advantages</u> <ul style="list-style-type: none"> simple incentive to increase quantity of material diverted builds on Existing Systems and infrastructure and extends backyard composter option not reliant on increasing range of materials but may do so <u>Disadvantages</u> <ul style="list-style-type: none"> limited flexibility to divert food waste - backyard composting/multi-family on-site composting only may require expansion/modification of existing processing facilities and collection systems to handle increased quantities may require a revised collection schedule or additional trucks to accommodate increased quantities of recyclables
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> compatible with Existing System Direct Cost System uses Existing Systems and infrastructure may require additional collection capacity and shift to weekly collection of recyclables may require expansion of composting and dry processing facilities 		

**TABLE P-5.3
RESIDENTIAL DIRECT COST SYSTEM
PEEL REGION
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Peel
SYSTEM: Direct Cost

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 37% residential waste diversion possible • an estimated 40% diversion possible with source reduction included (source reduction may be greater due to effect specifically from Direct Cost System - not quantified due to limited reliable data) 	<ul style="list-style-type: none"> • an estimated additional 12% diversion over Existing/Committed System possible 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • increased residential waste diversion • builds readily on existing/committed system • Direct Cost may also encourage greater reuse reduction <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • potential for illegal dumping of waste • not all effect of Direct Cost System adequately documented or quantify readily • limited diversion of food waste (22%)

TABLE P-5.4
RESIDENTIAL EXPANDED BLUE BOX SYSTEM
REGION OF PEEL
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Peel
 SYSTEM: Expanded Blue Box

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> Expanded Blue Box is proven to contribute to increased waste diversion and has shown to be reliable in pilot and full scale projects partial expansion of blue box materials accepted in Peel has proven successful already in Peel 	<ul style="list-style-type: none"> Expanded Blue Box is a reliable system that could be implemented in Peel it has been proven and is not dependent only on a single approach 	<u>Disadvantages</u> <ul style="list-style-type: none"> extensive promotion/education required to support effective participation still relies on willingness of residents to participate
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> as per Existing/Committed System Expanded Blue Box relies on Expanded list of dry materials collected and on promotion and education to encourage effective participation reliability is enhanced by combining several approaches (including depot collection of expanded list of recyclables at depots, extensive backyard composting etc.) 		

TABLE P-5.4
RESIDENTIAL EXPANDED BLUE BOX SYSTEM
REGION OF PEEL
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Peel

SYSTEM: Expanded Blue Box

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accommodated	<ul style="list-style-type: none"> flexibility gained through expanded range of dry materials accepted for curbside collection and at depots, and extensive distribution of backyard composters new processing facility would be required to accommodate increased range and quantity 	<ul style="list-style-type: none"> Expanded Blue Box modifies and enhances Existing System requires change in curbside collection of recyclables expands range of materials collected and results in greater quantities of waste diverted 	Advantages <ul style="list-style-type: none"> enhances Existing System by collecting wider range of greater quantity materials builds on Existing System behaviour/practices for dry materials
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> compatible with most elements of Existing System would require using existing or modified systems in the region (collection and processing systems for dry materials would require expansion/modification but the approaches would remain similar) continue to promote backyard composting 		Disadvantages <ul style="list-style-type: none"> may require capital expenditures for material processing facilities likely requires switch to weekly curbside collection of recyclables limited diversion of food waste (only through backyard composters, on-site composting and reuse)

TABLE P-5.4
RESIDENTIAL EXPANDED BLUE BOX SYSTEM
REGION OF PEEL
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Peel
 SYSTEM: Expanded Blue Box

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 38% residential waste diversion possible • an estimated 41% diversion possible with source reduction included 	<ul style="list-style-type: none"> • an estimated additional 13% diversion over Existing/Committed System possible 	<u>Advantages</u> <ul style="list-style-type: none"> • residential waste diversion increased significantly beyond Existing/System <u>Disadvantages</u> <ul style="list-style-type: none"> • limited diversion of food waste (20%)

**TABLE P-5.5
RESIDENTIAL WET/DRY SYSTEM
REGION OF PEEL
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Peel

SYSTEM: Wet/Dry

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> technology is proven in pilot scale projects in Ontario and at full scale in Europe technical problems with processing (e.g. compost) still exist compost quality is still a problem low levels of participation experienced in some projects 	<ul style="list-style-type: none"> system considered reliable in some jurisdictions (not yet in Ontario) incorporates combination of several alternative approaches potential for odours from composting plants can be mitigated through appropriate start-up procedures, careful monitoring and effective technology effective source separation required for reliability can be encouraged through extensive promotion/education 	<u>Advantages</u> <ul style="list-style-type: none"> technology well-developed in Europe potential for system breakdown is minimal and can be mitigated with public use of other diversion techniques <u>Disadvantages</u> <ul style="list-style-type: none"> effect of failure is significant as primary collection of all materials through one system not proven at full scale in North America relies on public willingness to participate requiring extensive promotion/education
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> Wet/Dry relies on a single approach (i.e. two or three stream collection) for garbage, dry recyclables and organics collection. Other 3Rs components are incorporated providing backup/alternatives in event of failure and to provide additional options (e.g. depots, backyard composting) relies on willingness of residents to participate 		

TABLE P-5.5
RESIDENTIAL WET/DRY SYSTEM
REGION OF PEEL
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Peel
 SYSTEM: Wet/Dry

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accommodated	<ul style="list-style-type: none"> flexibility gained by expanding range of dry materials collected curbside resulting in greater quantities collected allows collection of wet household waste - significantly increasing diversion of food 	<ul style="list-style-type: none"> increased flexibility gained through collection of expanded range of dry materials and household organics a new MRF or expanded existing MRF would be required to enhance system flexibility and accommodate increased quantities of dry recyclables 	<u>Advantages</u> <ul style="list-style-type: none"> collection of wider range and greater quantity of materials at curbside including food waste elements of Existing System maintained (eg. backyard composting)
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> requires fundamental change in Existing System to two or three stream collection - new equipment and modified behaviour relies on some elements of Existing System (eg. backyard compost for further diversion) 	<ul style="list-style-type: none"> new centralized composting facility (probably in-vessel) would be required modified behaviour required but based on source separation 	<u>Disadvantages</u> <ul style="list-style-type: none"> will require substantial new facilities will require modified behaviour of residents.

**TABLE P-5.5
RESIDENTIAL WET/DRY SYSTEM
REGION OF PEEL
SYSTEM NET EFFECTS BY CRITERION**

REGIONAL MUNICIPALITY: Peel
SYSTEM: Wet/Dry

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated 51% residential waste diversion possible • an estimated 54% diversion possible with source reduction included 	<ul style="list-style-type: none"> • an additional 26% diversion achievable beyond Existing/Committed System 	<p><u>Advantage</u></p> <ul style="list-style-type: none"> • significantly increased diversion beyond Existing/Committed system including significant diversion of food waste (69%) <p><u>Disadvantage</u></p> <ul style="list-style-type: none"> • some assumptions on waste diversion somewhat uncertain (because system has not been proven at full scale in Ontario).

TABLE P-5.6
RESIDENTIAL MIXED WASTE PROCESSING SYSTEM
REGION OF PEEL
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Peel
 SYSTEM: Mixed Waste Processing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technologies based on experience in other jurisdictions	<ul style="list-style-type: none"> Mixed Waste Processing composting not yet proven widely successful or reliable due to operational problems and poor compost quality 	<ul style="list-style-type: none"> Mixed Waste Processing system is not considered highly reliable but may be used as an add-on to an existing/committed system technology not proven to be widely successful 	<u>Advantages</u> <ul style="list-style-type: none"> potential for processing all waste remaining after backyard composting and recycling of other materials without reliance on participation of public in source separation <u>Disadvantages</u> <ul style="list-style-type: none"> experience has shown processing may fail due to operational problems and product quality - recyclables and compost
Indicator: Degree of reliance on single approach	<ul style="list-style-type: none"> reliability limited by dependence on single processing facility for "third bag" waste handles all recyclables and organics without reliance on willingness of residents to participate in source separation 		

TABLE P-5.6
RESIDENTIAL MIXED WASTE PROCESSING SYSTEM
REGION OF PEEL
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Peel
 SYSTEM: Mixed Waste Processing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accommodated	<ul style="list-style-type: none"> • very flexible as it may process all waste remaining after some source separation • quality of secondary materials and compost from mixed waste processing not as high as source separated materials 	<ul style="list-style-type: none"> • Mixed Waste Processing offers flexibility to increase range and quantity of materials accepted (since all material processed) though product quality is not considered as dependable • the system is partially compatible with existing collection systems but may discourage source separation (existing waste management policy) which achieves diversion by producing highest quality materials 	Advantages <ul style="list-style-type: none"> • increase in waste diversion through processing all waste and through mass reduction in composting process • significant increase in diversion of organics beyond Existing/Committed System
Indicator: Compatibility with Existing System	<ul style="list-style-type: none"> • compatible with most components of Existing/Committed system • conflicts with existing policy to promote participation in source separation • many mixed waste processing facilities exploit waste for refuse derived fuel (RDF) which is not possible in Ontario (due to legislation) • requires new processing plants 		Disadvantages <ul style="list-style-type: none"> • value of recyclables may not be as high • erodes advances in 3Rs promotion/acceptance by public

TABLE P-5.6
RESIDENTIAL MIXED WASTE PROCESSING SYSTEM
REGION OF PEEL
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: Peel
 SYSTEM: Mixed Waste Processing

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • an estimated residential diversion of between 55% and 74% depending on whether compost must be landfilled due to poor quality or whether it can be marketed (respectively) • if possible source reduction is included, the diversion potential is estimated to be in the range of 60% to 79% for these two scenarios respectively 	<ul style="list-style-type: none"> • an additional diversion of between 30% and 49% beyond Existing/Committed System depending on whether compost is landfilled due to poor quality or whether it is marketed 	<u>Advantage</u> <ul style="list-style-type: none"> • a significant increase in diversion achieved beyond Existing/Committed System • significant potential diversion of organic waste in particular, food • a portion of waste currently disposed may be processed for diversion <u>Disadvantages</u> <ul style="list-style-type: none"> • performance not widely proven to be reliable • marketability of materials processed in Mixed Waste Processing facility is uncertain

SCHEDULE Q
IC&I NET EFFECTS TABLES

TABLE Q-1.1
IC&I EXISTING SYSTEM
GTA
SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: IC&I Existing System
 CRITERIA GROUP: Service
 CRITERIA: Reliability
 INDICATOR: Proven Technology/Experience

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Dry Wastes <ul style="list-style-type: none"> Voluntary source separation of dry recyclables by some IC&I generators Collection of source separated dry recyclables from the IC&I sector by private sector haulers and recyclers. Curbside collection of IC&I recyclables in some areas by municipal forces. IC&I depots at transfer stations for use by small business generators Landfill bans on specified materials (e.g. wood, tires, drywall, scrap metal, white goods, fine paper etc.). 	<ul style="list-style-type: none"> proven technology diverts waste from disposal for recycling and reuse not all generators source separate waste materials landfill bans have a positive effect on diversion, but may lead to dumping and export 	<ul style="list-style-type: none"> increase education/promotion to encourage increased voluntary participation in source separation, source reduction, recycling and reuse strong markets for secondary materials will improve economics of recycling and increase diversion 	<ul style="list-style-type: none"> proven technology contributing to waste diversion but many generators do not participate in source separation
IC&I Collection – Wet Wastes <ul style="list-style-type: none"> Voluntary source separation of IC&I wet wastes Separate collection of IC&I wet wastes 	<ul style="list-style-type: none"> proven technology, not all generators source separate wet waste material 	<ul style="list-style-type: none"> increase education/promotion to view wet wastes as resource increase promotion/education to encourage redistribution of food waste as human or animal food encourage effective separation of wet organics to enhance composting and other uses 	<ul style="list-style-type: none"> proven technology contributing to waste diversion but many generators do not participate in source separation

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Processing – Dry Wastes</p> <ul style="list-style-type: none"> • Processing of specific dry materials (e.g. C&D wastes, wood, drywall etc.) in specially designed facilities • Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned by the private sector and operated by private sector staff • Processing of IC&I sector recyclables in municipal MRFs. • Processing of IC&I sector recyclables by small private sector recyclers 	<ul style="list-style-type: none"> • proven technology but continually undergoing improvements • some operational problems; mechanical components may break down • subject to build-up of material inventories or, not diverting particular materials due to lack of markets • operators tend to concentrate on most easily separated materials 	<ul style="list-style-type: none"> • develop/stabilize markets • careful management of operations to maximize quality and diversion 	<ul style="list-style-type: none"> • proven technology contributing to removal of materials from waste stream for reprocessing and reuse
<p>IC&I Processing – Wet Wastes</p> <ul style="list-style-type: none"> • Centralized windrow composting of source-separated IC&I organics • On-site composting of source separated organics generated by the IC&I sector • Vermicomposting at some IC&I locations • Rendering of food wastes from IC&I sector 	<ul style="list-style-type: none"> • composting is proven technology but some operational problems <ul style="list-style-type: none"> – odour problems can be problematic – finished compost quality can be inconsistent • not all IC&I wet wastes streams are compostable due to contaminants • achieves significant, approximately 50%, mass reduction • up to approximately 80% volume reduction for leaf wastes 	<ul style="list-style-type: none"> • encourage effective source separation of wet organics - promotion/education and incentives required • careful management of composting process 	<ul style="list-style-type: none"> • proven technology - significant mass/volume reduction • greatest benefit when finished compost marketable • composting sites experience some operational problems (e.g. odours)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Reuse</p> <ul style="list-style-type: none"> Reuse by IC&I generators, through the Canadian, provincial and local waste exchange programs Community-based reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Refilling of IC&I containers and packaging (e.g. refillable bottles, refillable pails or drums, etc) Use of re-usable packaging (e.g. reusable plastic and wood pallets) 	<ul style="list-style-type: none"> proven technology popular with industry-particularly demolition sector which has been practicing reuse for many years cost savings realized more preferred than recycling (second R in hierarchy) 	<ul style="list-style-type: none"> extend education/promotion of potential for reuse support re-use activities 	<ul style="list-style-type: none"> proven technology <ul style="list-style-type: none"> diversion from landfill reuse offers optimum cost savings compared to recycling depends on voluntary use and there are limited systems to stimulate identification of opportunities for reuse
<p>IC&I Reduction</p> <ul style="list-style-type: none"> Voluntary waste reduction actions by IC&I generators Voluntary reduction of packaging waste by the year 2000 (NAPP) - this includes reuse 	<ul style="list-style-type: none"> source reduction most preferred of 3Rs positive effect on waste reduction - but cannot depend on innovation by all generators source reduction proven to save money in many cases 	<ul style="list-style-type: none"> requires support for research for innovation (information, funding and market incentives) encourage reduction through increased education/promotion 	<ul style="list-style-type: none"> proven technology - diversion from landfill and cost savings realized depends on voluntary use and there are limited systems to stimulate identification of opportunities for reduction

IC&I Existing System, Reliability, Proven Technology (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Programs <ul style="list-style-type: none"> • Voluntary waste audits performed by IC&I generators • Independent voluntary waste reduction programs in private companies • Voluntary packaging reporting by packaging users (NAPP) 	<ul style="list-style-type: none"> • proven technology but many generators diversion do not voluntarily implement diversion programs • results in waste reduction and waste diversion, and provides cost savings • facility staff generally supportive 	<ul style="list-style-type: none"> • encourage through promotion and education • provide technical and advisory support to waste generators • involve facility staff, create incentives 	<ul style="list-style-type: none"> • proven technology - waste diversion and waste reduction from which cost savings also realized • depends on voluntary use and there are limited systems to stimulate identification of opportunities
IC&I Promotion & Education <ul style="list-style-type: none"> • Promotion/education programs focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality • Promotion/education of IC&I waste reduction by non-profit organizations • Promotion/education of IC&I waste reduction by associations 	<ul style="list-style-type: none"> • proven technology • essential component of 3Rs programs • enhances virtually all components of 3Rs waste management system • contributes to increased voluntary participation • implementation of internal education programs is voluntary 	<ul style="list-style-type: none"> • identify opportunities for education/promotion • maintain, extend and improve programs 	<ul style="list-style-type: none"> • proven technology; increases awareness of opportunities and responsibilities for waste diversion and reduction • implementation of internal education programs is voluntary

TABLE Q-1.1
IC&I EXISTING SYSTEM
GTA
SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: IC&I Existing System
 CRITERIA GROUP: Service
 CRITERIA: Flexibility
 INDICATOR: Types and Range of Quantities of Waste Accepted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection - Dry Wastes <ul style="list-style-type: none"> Voluntary source separation of dry recyclables by some IC&I generators Collection of source separated dry recyclables from the IC&I sector by private sector haulers and recyclers. Curbside collection of IC&I recyclables in some areas by municipal forces. IC&I depots at transfer stations for use by small business generators Landfill bans on specified materials (e.g. wood, tires, drywall, scrap metal, white goods, fine paper etc.). 	<ul style="list-style-type: none"> technology available to handle range of IC&I dry wastes haulers and operators respond to different waste materials types of materials collected affected by markets and by legislation such as landfill bans currently the strongest markets have led to voluntary separation of OCC, office paper, scrap metals, clean wood and PET quantity collected is related to some degree to market demand - increased markets can stimulate increased voluntary source-separation and collection quantity of waste available/handled affects revenues of operators/haulers - in some cases only the largest generators of a particular material or set of materials are serviced due to market availability and economics quantity of a material collected is related to processing capacity but flexibility to expand quantity and type material collected depend on willingness to source separate quantity and type of materials collected affect specification and requirements for processing facilities private sector will generally respond to provide service if opportunity and demand exists 	<ul style="list-style-type: none"> maintain/expand existing range and quantity of materials collected by: <ul style="list-style-type: none"> increased promotion/education support to market development prudent application of landfill bans 	<ul style="list-style-type: none"> limited by generators willingness to source separate technology flexible in terms of range and quantity of materials accepted - positive affect on diversion by increasing range and quantity of materials collected markets for processed wastes are the most significant factor leading to increased collection and diversion

IC&I Existing System, Flexibility, Types and Quantities (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Collection - Wet Wastes</p> <ul style="list-style-type: none"> • Voluntary source separation of IC&I wet wastes • Separate collection of IC&I wet wastes 	<ul style="list-style-type: none"> • technology exists to handle effectively clean source separated wet organics, while mixed wet wastes most often are landfilled • currently a relatively small amount of food waste is being effectively separated and collected - mostly in institutional and food service sectors • quality of source separation of contaminants from wet organics affects potential to compost, use in land spreading and use as animal feed, and thus increases diversion • quantity diverted is affected by market demand, and by willingness to source separate • quantity and extent of separation affect specification and requirements for processing facilities • source separation of wet wastes can improve diversion of dry wastes (by minimizing contamination) 	<ul style="list-style-type: none"> • promotion/education concerning source separation of wet wastes • encourage effective source separation of wet organics to ensure marketability 	<ul style="list-style-type: none"> • technology is flexible, capacity can be increased though additional facilities and equipment would be required • limited by willingness of generators to source separate • increasing source separation of wet waste may have positive effect on potential diversion dry wastes • increasing separation of organics has a positive affect on waste diversion

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Processing – Dry Wastes <ul style="list-style-type: none"> Processing of specific dry materials (e.g. C&D wastes, wood, drywall etc.) in specially designed facilities Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned by the private sector and operated by private sector staff Processing of IC&I sector recyclables in municipal MRFs. Processing of IC&I sector recyclables by small private sector recyclers 	<ul style="list-style-type: none"> current limitations on market demand effect range of materials diverted market availability can stimulate increased voluntary source separation and collection, and can have a positive affect on processing requirements and diversion willingness to source separate, particularly wet/dry, affects processing potential positively processing capacity flexible (can be increased) if markets available – may require investment in facilities and equipment MRFs can increase capacity by working 2 or 3 shifts, 7 days per week limited flexibility to process mixed plastics economically 	<ul style="list-style-type: none"> maintain/expand existing range and quantity of materials processed by: <ul style="list-style-type: none"> – increased promotion/education – support for market development 	<ul style="list-style-type: none"> capacity is flexible but quantities diverted limited by reliance on voluntary source separation potential exists to increase range and quantity of materials processed with positive effect on waste diversion
IC&I Processing – Wet Wastes <ul style="list-style-type: none"> Centralized windrow composting of source-separated IC&I organics On-site composting of source separated organics generated by the IC&I sector Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector 	<ul style="list-style-type: none"> rendering capacity can be increased composting capacity limited, but a number of proposed facilities would provide increased capacity increased quality/extent of source separation of wet organic wastes increases potential to process into marketable product either for direct land application, animal food or composting 	<ul style="list-style-type: none"> increase promotion/education of advantages of source separation of wet wastes and development of markets provide more opportunities for productive use of finished compost 	<ul style="list-style-type: none"> technology is flexible - potential to increase quantity of wet wastes diverted depends on quality of product may need new facilities limited by willingness of generators to source separate

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Reuse</p> <ul style="list-style-type: none"> Reuse by IC&I generators, through the Canadian, provincial and local waste exchange programs Community-based reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Refilling of IC&I containers and packaging (e.g. refillable bottles, refillable pails or drums, etc) Use of re-usable packaging (e.g. reusable plastic and wood pallets) 	<ul style="list-style-type: none"> wide range of materials accepted for reuse, but depends on willingness of generators to identify opportunities potential to adjust to demand and innovation extends range/quantity of materials diverted as can handle difficult-to-recycle/non-recyclable goods cost savings serve as incentive to explore 3Rs initiatives innovation for reusable packaging can have a positive effect on diversion 	<ul style="list-style-type: none"> increase promotion/education of reuse option support innovation for reusable products/equipment and packaging 	<ul style="list-style-type: none"> approach is flexible, can be applied to a number of different products/packages/wastes increasing range and quantity of materials reused has positive effect on waste diversion with lower costs depends on voluntary use and there are limited system to stimulate identification of opportunities besides incentive of cost savings
<p>IC&I Reduction</p> <ul style="list-style-type: none"> Voluntary waste reduction actions by IC&I generators Voluntary reduction of packaging waste by the year 2000 (NAPP) - this includes reuse 	<ul style="list-style-type: none"> innovation toward reduction can pertain to wide range and quantity of materials innovation will depend in part on economic and legislative factors 	<ul style="list-style-type: none"> increase education/promotion of reduction support research for innovation (information and funding) 	<ul style="list-style-type: none"> increasing range of materials covered in waste reduction efforts has positive affect on waste diversion and can achieve cost savings depends on voluntary use and there are limited system to stimulate identification of opportunities besides incentive of cost savings

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Programs <ul style="list-style-type: none"> • Voluntary waste audits performed by IC&I generators • Independent voluntary waste reduction programs in private companies • Voluntary packaging reporting by packaging users (NAPP) 	<ul style="list-style-type: none"> • programs can be directed toward a wide range and quantity of materials • programs are established on a voluntary basis 	<ul style="list-style-type: none"> • continue education/promotion of 3Rs, and benefits of audits/WRAP's • facilitate and provide technical support to establish programs • continue to develop markets and incentives 	<ul style="list-style-type: none"> • positive effect on range and quantity of materials reduced, reused and recycled • depends on voluntary use and there are limited system to stimulate identification of opportunities besides incentive of cost savings
IC&I Promotion & Education <ul style="list-style-type: none"> • Promotion/education programs focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality • Promotion/education of IC&I waste reduction by non-profit organizations • Promotion/education of IC&I waste reduction by associations 	<ul style="list-style-type: none"> • promotion and education can focus on wide range and quantity of materials • implementation of internal education programs by generators is voluntary 	<ul style="list-style-type: none"> • continue to provide education/promotion services focusing on a wide range and quantity of materials 	<ul style="list-style-type: none"> • education/promotion can increase the range and quantity of materials diverted

TABLE Q-1.1
IC&I EXISTING SYSTEM
GTA
SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: IC&I Existing System
 CRITERIA GROUP: Service
 CRITERIA: Performance
 INDICATOR: Quantity Diverted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Dry Wastes <ul style="list-style-type: none"> Voluntary source separation of dry recyclables by some IC&I generators Collection of source separated dry recyclables from the IC&I sector by private sector haulers and recyclers. Curbside collection of IC&I recyclables in some areas by municipal forces. IC&I depots at transfer stations for use by small business generators Landfill bans on specified materials (e.g. wood, tires, drywall, scrap metal, white goods, fine paper etc.). 	<ul style="list-style-type: none"> current voluntary efforts estimated to divert 28% of IC&I waste from disposal 	<ul style="list-style-type: none"> continue promotion/education regarding source separation for 3Rs support development of markets maintain/extend prudent implementation of landfill bans 	<ul style="list-style-type: none"> Source separation and collection of dry wastes required for diversion current voluntary efforts estimated to divert 28% of IC&I waste from disposal
IC&I Collection – Wet Wastes <ul style="list-style-type: none"> Voluntary source separation of IC&I wet wastes Separate collection of IC&I wet wastes 	<ul style="list-style-type: none"> current voluntary diversion estimated to be less than 1% of IC&I waste stream 	<ul style="list-style-type: none"> continue promotion/education regarding source separation of wet wastes encourage improved source separation of materials limiting marketability of wet organic waste products 	<ul style="list-style-type: none"> current voluntary diversion estimated to be less than 1% of IC&I waste stream

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Processing – Dry Wastes <ul style="list-style-type: none"> Processing of specific dry materials (e.g. C&D wastes, wood, drywall etc.) in specially designed facilities Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned by the private sector and operated by private sector staff Processing of IC&I sector recyclables in municipal MRFs. Processing of IC&I sector recyclables by small private sector recyclers 	<ul style="list-style-type: none"> currently processing dry materials an estimated 28% of IC&I waste stream diversion depends on markets for products: potentially useful materials can be left in disposed stream when market not strong diversion at processing stage depends on contamination of dry recyclables 	<ul style="list-style-type: none"> continue/extend promotion of source separation development of markets for dry waste materials 	<ul style="list-style-type: none"> currently processing dry materials representing an estimated 28% of IC&I waste depending on markets and level of source separation
IC&I Processing – Wet Wastes <ul style="list-style-type: none"> Centralized windrow composting of source-separated IC&I organics On-site composting of source separated organics generated by the IC&I sector Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector 	<ul style="list-style-type: none"> estimated currently to be processing organic wastes representing less than 1% of IC&I waste streams 	<ul style="list-style-type: none"> promotion/education regarding source separation and separate management of wet wastes 	<ul style="list-style-type: none"> estimated currently to be processing organic wastes representing less than 1% of IC&I waste streams

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Reuse</p> <ul style="list-style-type: none"> • Reuse by IC&I generators, through the Canadian, provincial and local waste exchange programs • Community-based reuse programs for small IC&I generators • Use of food wastes as animal feed • Use of food waste for human consumption • Landspreading of IC&I organics • Refilling of IC&I containers and packaging (e.g. refillable bottles, refillable pails or drums, etc) • Use of re-usable packaging (e.g. reusable plastic and wood pallets) 	<ul style="list-style-type: none"> • positive effect on diversion through reuse of items and materials • difficult to quantify all reuse effects (e.g. garage sales, informal swaps, etc.) • 1992 - 56,000 tonnes waste handled by Ontario Waste Exchange 	<ul style="list-style-type: none"> • increase promotion of potential for reuse of wastes • support innovation for reusable items 	<ul style="list-style-type: none"> • reuse provides potential for increased waste reduction and diversion and reduced waste disposal but difficult to quantify
<p>IC&I Reduction</p> <ul style="list-style-type: none"> • Voluntary waste reduction actions by IC&I generators • Voluntary reduction of packaging waste by the year 2000 (NAPP) - this includes reuse 	<ul style="list-style-type: none"> • positive effect on diversion through waste reduction • difficult to quantify waste reduction effect. On-going assessment of programs toward NAPP goals 	<ul style="list-style-type: none"> • promotion of potential for waste reduction • facilitate organization efforts for waste reduction • support for innovation for waste reduction 	<ul style="list-style-type: none"> • reduction valuable contribution to waste diversion • difficult to quantify

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Programs <ul style="list-style-type: none"> • Voluntary waste audits performed by IC&I generators • Independent voluntary waste reduction programs in private companies • Voluntary packaging reporting by packaging users (NAPP) 	<ul style="list-style-type: none"> • potentially positive effect on diversion through increased awareness of opportunities for waste reduction/diversion • difficult to quantify waste reduction and diversion resulting from specific programs at this point • secondary positive effect of employee awareness of waste stream 	<ul style="list-style-type: none"> • promotion/education regarding potential of 3Rs programs • on-going assessment of programs toward NAPP goals 	<ul style="list-style-type: none"> • IC&I waste reduction programs provide potential positive effect on waste diversion and waste reduction – difficult to quantify
IC&I Promotion & Education <ul style="list-style-type: none"> • Promotion/education programs focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality • Promotion/education of IC&I waste reduction by non-profit organizations • Promotion/education of IC&I waste reduction by associations 	<ul style="list-style-type: none"> • difficult to quantify effect of promotion/education on waste diversion • generally believed to have positive effects on most 3R components of waste management systems 	<ul style="list-style-type: none"> • maintain/extend existing promotion/education as appropriate 	<ul style="list-style-type: none"> • positive effect on waste diversion and reduction – difficult to quantify

TABLE Q-1.2
IC&I EXISTING/COMMITTED SYSTEM
GTA
SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: IC&I Existing/Committed System
 CRITERIA GROUP: Service
 CRITERIA: Reliability
 INDICATOR: Proven Technology

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection - Dry Wastes <ul style="list-style-type: none"> Voluntary source separation of dry recyclables by some IC&I generators Mandatory source separation of designated materials by designated major generators (3Rs regulations) Collection of source separated dry recyclables from the IC&I sector by private sector haulers and recyclers Curbside collection of IC&I recyclables in some areas by municipal forces IC&I depots at transfer stations for use by small business generators Community Recycling Centres for use by small quantity IC&I generators Landfill bans on specified materials (e.g. wood, tires, drywall, scrap metal, white goods, fine paper etc.) 	<ul style="list-style-type: none"> 3Rs regulations proven approach in other jurisdictions, e.g. Rhode Island by requiring an increased number of establishments to practise source separation and to divert waste from landfill for recycling and reuse many major waste generators may not be subject to mandatory regulations waste generators not covered by regulations may not voluntarily source separate wastes overall diversion impact low (Rhode Island) when only major IC&I generators subject to the regulations 3Rs regulations only target the largest generators regulations have no definite plan to ensure compliance landfill bans have a positive effect on diversion but may lead to dumping and export 	<ul style="list-style-type: none"> increase education/promotion/monitoring to ensure major waste generators comply with regulations education/promotion for voluntary source separation by establishments not subject to regulation education/promotion for voluntary source separation of additional materials 	<ul style="list-style-type: none"> proven technology with positive effect on waste diversion relies on voluntary efforts by all but the largest generators, and limited means to ensure compliance are defined

IC&I Existing/Committed System, Reliability, Proven Technology (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Wet Wastes <ul style="list-style-type: none"> • Voluntary source separation of IC&I generated organics • Separate collection of IC&I wet wastes 	<ul style="list-style-type: none"> • separation of wet wastes carried out on voluntary basis • proven technology, but not all generators source separate organics • for some major generators increased source separation of dry wastes as well as waste audits and plans required by 3Rs regulations may have positive effect on source separation of wet organics 	<ul style="list-style-type: none"> • increase education/promotion • encourage effective separation of wet organics to enhance composting and other uses 	<ul style="list-style-type: none"> • proven technology contributing to waste diversion but regulations do not require waste generators to source separate organics
IC&I Processing – Dry Wastes <ul style="list-style-type: none"> • Processing of specific dry materials (e.g. C&D wastes, wood, drywall) in specially designed facilities • Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned by the private sector and operated by private sector staff • Processing of IC&I sector recyclables in municipal MRFs • Processing of IC&I sector recyclables by small private sector recyclers 	<ul style="list-style-type: none"> • as per Existing System • may need some increased capacity to handle increase of source separated materials resulting from mandatory source separation legislation 	<ul style="list-style-type: none"> • as per Existing System • no additional required 	<ul style="list-style-type: none"> • as per Existing System • may need some increased capacity to handle increase of source separated materials resulting from mandatory source separation legislation

IC&I Existing/Committed System, Reliability, Proven Technology (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Processing – Wet Wastes <ul style="list-style-type: none"> Centralized windrow composting of source-separated IC&I organics On-site composting of source separated organics generated by the IC&I sector Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector 	<ul style="list-style-type: none"> as per Existing System no additional effects noted 	<ul style="list-style-type: none"> as per Existing System no additional required 	<ul style="list-style-type: none"> as per Existing System no additional effects noted
IC&I Reuse <ul style="list-style-type: none"> Reuse by IC&I generators, through the Canadian, provincial and local waste exchange programs Community-based reuse programs and Community Recycling Centres with reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Use of refillable containers (refillable bottles, refillable pails or drums, etc.) Use of re-usable packaging (e.g. reusable plastic and wood pallets) 	<ul style="list-style-type: none"> as per Existing System no additional effects noted 	<ul style="list-style-type: none"> as per Existing System no additional required 	<ul style="list-style-type: none"> as per Existing System no additional effects noted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Reduction</p> <ul style="list-style-type: none"> • Voluntary waste reduction actions by IC&I generators • Voluntary reduction of packaging waste by the year 2000 (NAPP) - this includes reuse • Mandatory development of waste reduction action plans by designated major IC&I generators (defined in 3Rs regulations) • Mandatory development of packaging reduction action plans by designated major packaging generators (defined in 3Rs regulations) 	<ul style="list-style-type: none"> • regulated waste audit approach proven in other jurisdictions (e.g. Rhode Island) • diversion potential limited if only major generators included • positive effect on identifying opportunities for waste reduction • requires commitment from waste generators for follow-up on audits and plans • requires monitoring/follow-up to ensure progress toward implementation of action plans but limited plans explicitly defined in 3Rs regulations 	<ul style="list-style-type: none"> • promotion/education of 3Rs potential • provide monitoring/technical support for implementation of plans • support research toward innovative measures 	<ul style="list-style-type: none"> • proven technology positive effect on reduction of waste disposed • limited by coverage of 3Rs regulations and by extent of plans to follow-up to ensure compliance and provide support
<p>IC&I Programs</p> <ul style="list-style-type: none"> • Voluntary waste audits performed by IC&I generators • Independent voluntary waste reduction programs in private companies • Mandatory waste audits by designated major IC&I generators (3Rs regulations) • Mandatory packaging audits by designated major packaging generators (3Rs regulations) • Voluntary packaging reporting by packaging users (NAPP) 	<ul style="list-style-type: none"> • proven technology • effective in identifying opportunities for waste reduction and diversion • requires commitment from waste generators for follow-up on audits and plans • may require monitoring/follow-up to ensure progress toward implementation of plans • effect of regulations depends on coverage of regulations; otherwise depends on voluntary commitment 	<ul style="list-style-type: none"> • promotion/education of 3Rs potential • provide monitoring/technical support for implementation of plans 	<ul style="list-style-type: none"> • proven technology with positive effect on waste reduction and diversion from landfill • limited by coverage of 3Rs regulations and by extent of plans to follow-up to ensure compliance and provide support

IC&I Existing/Committed System, Reliability, Proven Technology (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Promotion & Education</p> <ul style="list-style-type: none"> Promotion/education programs focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality Promotion/education of IC&I waste reduction by non-profit organizations Promotion/education of IC&I waste reduction by associations Mandatory posting of waste reduction plans for review by employees of designated major IC&I generators (3Rs regulations) 	<ul style="list-style-type: none"> proven technology essential component of 3Rs programs enhances virtually all components of 3Rs waste management systems opportunity for employees to participate in waste management implementation of limited internal education is mandatory but depends on coverage of 3Rs regulations 	<ul style="list-style-type: none"> continue to identify opportunities for education/promotion support education/promotion activities of waste generators develop promotion/education program on 3Rs regulations 	<ul style="list-style-type: none"> proven technology increase awareness of opportunities and responsibilities for waste diversion and reduction implementation of limited internal education is mandatory but depends on coverage of 3Rs regulations

TABLE Q-1.2
IC&I EXISTING/COMMITTED SYSTEM
GTA
SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: IC&I Existing/Committed System
 CRITERIA GROUP: Service
 CRITERIA: Flexibility
 INDICATOR: Types and Range of Quantities of Waste Accepted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Dry Wastes <ul style="list-style-type: none"> • Voluntary source separation of dry recyclables by some IC&I generators • Mandatory source separation of designated materials by designated major generators (3Rs regulations) • Collection of source separated dry recyclables from the IC&I sector by private sector haulers and recyclers • Curbside collection of IC&I recyclables in some areas by municipal forces • IC&I depots at transfer stations for use by small business generators • Community Recycling Centres for use by small quantity IC&I generators • Landfill bans on specified materials (e.g. wood, tires, drywall, scrap metal, white goods, fine paper etc.) 	<ul style="list-style-type: none"> • as per Existing System • positive effect on diversion as range of materials source separated by many establishments should increase due to legislation • positive effect on diversion as quantity of materials should increase under legislation • may require additional collection and processing capacity – quantity of a material collected is related to processing capacity but flexibility to expand. Stockpiling may occur in interim • materials currently subject to regulations have strongest markets (OCC, glass, metal, fine paper, PET, and to some extent, HDPE) • increase in quantity collected may require further market development to realize diversion • contamination of dry wastes reduces marketability 	<ul style="list-style-type: none"> • as per Existing System • support market development for source-separated materials 	<ul style="list-style-type: none"> • as per Existing System • positive effect on waste diversion as range and quantity of materials source separated likely to increase due to 3Rs regulations, though coverage of regulation is limited

IC&I Existing/Committed System, Flexibility, Types and Quantities (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection - Wet Wastes <ul style="list-style-type: none"> • Voluntary source separation of IC&I generated organics • Separate collection of IC&I wet wastes 	<ul style="list-style-type: none"> • as per Existing System • committed policy does not address wet wastes generated by IC&I sector • increased source separation of dry wastes and other aspects of 3Rs regulations may have positive spin off on source separation of wet wastes 	<ul style="list-style-type: none"> • as per Existing System 	<ul style="list-style-type: none"> • as per Existing System though possibility of increased source separation of wet organic wastes due to some aspects of 3Rs regulations
IC&I Processing - Dry Wastes <ul style="list-style-type: none"> • Processing of specific dry materials (e.g. C&D wastes, wood, drywall) in specially designed facilities • Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned by the private sector and operated by private sector staff • Processing of IC&I sector recyclables in municipal MRFs • Processing of IC&I sector recyclables by small private sector recyclers 	<ul style="list-style-type: none"> • expansion of processing capacity may be required, to handle likely increase in dry material sources separated • range of materials accepted by processing facilities may change • stockpiling, export and disposal of recyclables may increase depending on markets • materials subject to committed 3Rs regulations have strongest markets and are most easily recycled 	<ul style="list-style-type: none"> • support development of markets for waste materials • support innovation in processing and reprocessing to create markets 	<ul style="list-style-type: none"> • 3Rs regulations likely to result in increasing range and quantity of dry recyclables processed and marketed with positive effect on waste diversion

IC&I Existing/Committed System, Flexibility, Types and Quantity (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Processing – Wet Wastes <ul style="list-style-type: none"> Centralized windrow composting of source-separated IC&I organics On-site composting of source separated organics generated by the IC&I sector Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector 	<ul style="list-style-type: none"> as per Existing System committed policy does not require separate management by IC&I sector possible increase in wet wastes separated for processing due to 3Rs regulations (though not directly targetted) increased quality of organics waste and finished compost increases marketability 	<ul style="list-style-type: none"> as per Existing System continue promotion/education to encourage effective source separation of wet organics to ensure marketability 	<ul style="list-style-type: none"> as per Existing System possible increase in separation of wet wastes would lead to increased waste diversion
IC&I Reuse <ul style="list-style-type: none"> Reuse by IC&I generators, through the Canadian, provincial and local waste exchange programs Community-based reuse programs and Community Recycling Centres with reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Use of refillable containers (refillable bottles, refillable pails or drums, etc.) Use of re-usable packaging (e.g. reusable plastic and wood pallets) 	<ul style="list-style-type: none"> as per Existing System packaging and waste audits and waste reduction plans may stimulate reuse initiatives reuse preferred to recycling where feasible but depends on willingness of generators to identify opportunities 	<ul style="list-style-type: none"> as per Existing System promotion/education to ensure that IC&I sector are aware of this option 	<ul style="list-style-type: none"> as per Existing System possible positive effect from packaging and waste audits and waste reduction plans

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Reduction</p> <ul style="list-style-type: none"> • Voluntary waste reduction actions by IC&I generators • Voluntary reduction of packaging waste by the year 2000 (NAPP) - this includes reuse • Mandatory development of waste reduction action plans by designated major IC&I generators (defined in 3Rs regulations) • Mandatory development of packaging reduction action plans by designated major packaging generators (defined in 3Rs regulations) 	<ul style="list-style-type: none"> • possible increased innovation both regarding waste produced and use of recyclable materials • reduction must be quantified in packaging audits - causes increased awareness for manufacturers • depends to some degree on coverage of, and compliance with regulations 	<ul style="list-style-type: none"> • education/promotion of reduction • support production/implementation of action plans • support research 	<ul style="list-style-type: none"> • potential positive effect on waste reduction and use of recyclable materials depending on coverage of, and compliance with regulations
<p>IC&I Programs</p> <ul style="list-style-type: none"> • Voluntary waste audits performed by IC&I generators • Independent voluntary waste reduction programs in private companies • Mandatory waste audits by designated major IC&I generators (3Rs regulations) • Mandatory packaging audits by designated major packaging generators (3Rs regulations) • Voluntary packaging reporting by packaging users (NAPP) 	<ul style="list-style-type: none"> • through waste audits and packaging audits opportunities can be identified for waste reduction or recycling • quantity and range of materials diverted from disposal may increase • depends to some degree on coverage of, and compliance with regulations • increasing range and size of markets for materials will increase opportunities 	<ul style="list-style-type: none"> • continue education/promotion of 3Rs • further develop/stabilize markets for waste materials - can use audit information to better define quantity of materials 	<ul style="list-style-type: none"> • potential positive effect on waste reduction and use of recyclable materials depending on coverage of, and compliance with regulations

IC&I Existing/Committed System, Flexibility, Types and Quantities (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Promotion & Education</p> <ul style="list-style-type: none"> • Promotion/education programs focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality • Promotion/education of IC&I waste reduction by non-profit organizations • Promotion/education of IC&I waste reduction by associations • Mandatory posting of waste reduction plans for review by employees of designated major IC&I generators (3Rs regulations) 	<ul style="list-style-type: none"> • facilitating review by employees of waste reduction plans can lead to more effective source separation, greater possibility for innovation • depends to some degree on coverage of, and compliance with regulations 	<ul style="list-style-type: none"> • extend promotion/education to ensure compliance with regulations and to encourage voluntary recycling 	<ul style="list-style-type: none"> • possible positive effect on range and quantity of materials diverted

TABLE Q-1.2
IC&I EXISTING/COMMITTED SYSTEM
GTA
SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: IC&I Existing/Committed System
 CRITERIA GROUP: Service
 CRITERIA: Performance
 INDICATOR: Quantity Diverted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection - Dry Wastes <ul style="list-style-type: none"> Voluntary source separation of dry recyclables by some IC&I generators Mandatory source separation of designated materials by designated major generators (3Rs regulations) Collection of source separated dry recyclables from the IC&I sector by private sector haulers and recyclers Curbside collection of IC&I recyclables in some areas by municipal forces IC&I depots at transfer stations for use by small business generators Community Recycling Centres for use by small quantity IC&I generators Landfill bans on specified materials (e.g. wood, tires, drywall, scrap metal, white goods, fine paper etc.) 	<ul style="list-style-type: none"> depending on the extent of inclusion of establishments in the proposed 3R regulations, a greater quantity of materials will be source separated and collected if 40% of the material in sectors subject to the regulations is assumed to be captured by the regulations, the diversion of dry materials is estimated to be 30% of waste if 60% of those materials are assumed to be captured the diversion of dry materials is estimated to be 34% of waste the degree of overlap between current voluntary efforts and Existing/Committed mandatory requirements is uncertain 	<ul style="list-style-type: none"> continue promotion/education regarding source separation for 3Rs support development of markets maintain/extend prudent implementation of landfill bans 	<ul style="list-style-type: none"> depending on the coverage of the regulations it is estimated that diversion of dry materials could be in the range of 30% to 34%

IC&I Existing/Committed System, Performance, Quantities (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Wet Wastes <ul style="list-style-type: none"> • Voluntary source separation of IC&I generated organics • Separate collection of IC&I wet wastes 	<ul style="list-style-type: none"> • as per Existing System • Existing/Committed system does not require any mandatory source separation of organics • current diversion of wet organics is relatively low and is estimated to be less than 1% of IC&I waste 	<ul style="list-style-type: none"> • continue promotion/education regarding source separation of wet wastes • encourage improved source separation of materials limiting marketability of wet organic waste products 	<ul style="list-style-type: none"> • as per Existing System • source separation and collection of wet wastes is estimated to result in diversion of less than 1% of IC&I waste
IC&I Processing – Dry Wastes <ul style="list-style-type: none"> • Processing of specific dry materials (e.g. C&D wastes, wood, drywall) in specially designed facilities • Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned by the private sector and operated by private sector staff • Processing of IC&I sector recyclables in municipal MRFs • Processing of IC&I sector recyclables by small private sector recyclers 	<ul style="list-style-type: none"> • as per Existing System • processing capacity is likely sufficient to handle the increased collection of source separated waste, estimated to be from 30% to 34% of the IC&I waste stream 	<ul style="list-style-type: none"> • as per Existing System • no additional identified 	<ul style="list-style-type: none"> • as per Existing System • processing capacity is likely sufficient to handle the increased collection of source separated waste, estimated to be from 30% to 34% of the IC&I waste stream

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Processing – Wet Wastes <ul style="list-style-type: none"> Centralized windrow composting of source-separated IC&I organics On-site composting of source separated organics generated by the IC&I sector Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector 	<ul style="list-style-type: none"> as per Existing System no additional effect noted may achieve (spin-off) increase in processing of wet organics but not quantifiable 	<ul style="list-style-type: none"> no additional required 	<ul style="list-style-type: none"> as per Existing System no additional effect noted
IC&I Reuse <ul style="list-style-type: none"> Reuse by IC&I generators, through the Canadian, provincial and local waste exchange programs Community-based reuse programs and Community Recycling Centres with reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Use of refillable containers (refillable bottles, refillable pails or drums, etc.) Use of re-usable packaging (e.g. reusable plastic and wood pallets) 	<ul style="list-style-type: none"> as per Existing System the additional effects depend on coverage of and compliance with 3Rs regulations. The affects are expected to be relatively small and have not been quantified specifically 	<ul style="list-style-type: none"> as per Existing System no additional required 	<ul style="list-style-type: none"> as per Existing System the additional effects depend on coverage of and compliance with 3Rs regulations. The affects are expected to be relatively small and have not been quantified specifically

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Reduction <ul style="list-style-type: none"> • Voluntary waste reduction actions by IC&I generators • Voluntary reduction of packaging waste by the year 2000 (NAPP) - this includes reuse • Mandatory development of waste reduction action plans by designated major IC&I generators (defined in 3Rs regulations) • Mandatory development of packaging reduction action plans by designated major packaging generators (defined in 3Rs regulations) 	<ul style="list-style-type: none"> • as per Existing System • the additional effects depend on coverage of and compliance with 3Rs regulations. The affects are expected to be relatively small and have not been quantified specifically 	<ul style="list-style-type: none"> • some form of monitoring and follow-up to provide feedback and inform policy and market development • on-going assessment of program toward NAPP goals 	<ul style="list-style-type: none"> • as per Existing System • the additional effects depend on coverage of and compliance with 3Rs regulations. The affects are expected to be relatively small and have not been quantified specifically
IC&I Programs <ul style="list-style-type: none"> • Voluntary waste audits performed by IC&I generators • Independent voluntary waste reduction programs in private companies • Mandatory waste audits by designated major IC&I generators (3Rs regulations) • Mandatory packaging audits by designated major packaging generators (3Rs regulations) • Voluntary packaging reporting by packaging users (NAPP) 	<ul style="list-style-type: none"> • as per Existing System • the additional effects depend on coverage of and compliance with 3Rs regulations. The affects are expected to be relatively small and have not been quantified specifically 	<ul style="list-style-type: none"> • promotion/education regarding potential of 3Rs programs • some form of follow-up to quantify to inform policy and market development • on-going assessment of program toward NAPP goals 	<ul style="list-style-type: none"> • as per Existing System • the additional effects depend on coverage of and compliance with 3Rs regulations. The affects are expected to be relatively small and have not been quantified specifically

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Promotion & Education</p> <ul style="list-style-type: none"> Promotion/education programs focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality Promotion/education of IC&I waste reduction by non-profit organizations Promotion/education of IC&I waste reduction by associations Mandatory posting of waste reduction plans for review by employees of designated major IC&I generators (3Rs regulations) 	<ul style="list-style-type: none"> as per Existing System the additional effects depend on coverage of and compliance with 3Rs regulations. The affects are expected to be relatively small and have not been quantified specifically 	<ul style="list-style-type: none"> extend existing promotion/education to encourage voluntary recycling and to encourage compliance 	<ul style="list-style-type: none"> as per Existing System the additional effects depend on coverage of and compliance with 3Rs regulations. The affects are expected to be relatively small and have not been quantified specifically

TABLE Q-1.3
IC&I EXTENDED 3RS REGULATIONS
GTA
SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: IC&I Extended 3Rs System
 CRITERIA GROUP: Service
 CRITERIA: Reliability
 INDICATOR: Proven Technology

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection - Dry Wastes <ul style="list-style-type: none"> Mandatory source separation of designated materials by most IC&I generators in GTA (to capture generators of 90% of total IC&I waste - revision to 3Rs regulations) Voluntary source separation of dry recyclables by small IC&I generators Collection of source separated dry recyclables from the IC&I sector by private sector haulers and recyclers Curbside collection of IC&I recyclables in some areas by municipal forces IC&I depots at transfer stations for use by small business generators Community Recycling Centres for use by small quantity IC&I generators Landfill bans on specified materials (e.g. wood, tires, drywall, scrap metal, white goods, fine paper etc.) 	<ul style="list-style-type: none"> as per Existing/Committed System regulations requiring mandatory source separation proven approach increase in number of IC&I generators that will be required to source separate regulations aiming for 90% capture of IC&I waste materials not yet demonstrated not all waste generators subject to regulation will want to source separate wastes success depends on effective design of regulations to identify and regulate establishments which generate most (90%) of IC&I waste 	<ul style="list-style-type: none"> increase education/promotion/monitoring to ensure waste generators complying with regulations effective monitoring and follow-up required to ensure compliance and effective source separation education/promotion to encourage voluntary source separation of additional materials by generators not subject to the regulations 	<ul style="list-style-type: none"> proven technology for most materials with positive effect on waste diversion mandatory source separation regulations proven approach though implementation with extensive coverage not yet demonstrated expected to depend on commitment and measures to ensure compliance

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Wet Wastes <ul style="list-style-type: none"> • Voluntary source separation of IC&I generated organics • Separate collection of IC&I wet wastes 	<ul style="list-style-type: none"> • as per Existing/Committed System 	<ul style="list-style-type: none"> • as per Existing/Committed System 	<ul style="list-style-type: none"> • as per Existing/Committed System
IC&I Processing – Dry Wastes <ul style="list-style-type: none"> • <i>Additional processing capacity for dry recyclables required</i> • Processing of specific dry materials (e.g. C&D wastes, wood, drywall) in specially designed facilities • Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned by the private sector and operated by private sector staff • Processing of IC&I sector recyclables in municipal MRFs • Processing of IC&I sector recyclables by small private sector recyclers 	<ul style="list-style-type: none"> • as per Existing/Committed System • technical limits for some waste streams and materials (e.g. construction & demolition wastes, mixed plastics etc.) • some operational problems (e.g. breakdown of mechanical components, sorting technologies for some materials limited eg. plastics) • subject to stockpiling of particular materials depending on market conditions • possible disposal of a percentage of contaminated recyclables • reprocessing capacity may not exist locally (eg. polycoat containers) so active market identification required 	<ul style="list-style-type: none"> • as per Existing/Committed System • enforcement of private sector processing facilities to ensure compliance with Certificates of Approval • continue to improve processing technology, particularly for plastics • continue to identify and develop strong, stable end markets for all materials 	<ul style="list-style-type: none"> • as per Existing/Committed System • proven technology contributing to diversion of materials from disposal for reprocessing and reuse

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Processing – Wet Wastes <ul style="list-style-type: none"> Centralized windrow composting of source-separated IC&I organics On-site composting of source separated organics generated by the IC&I sector Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector 	<ul style="list-style-type: none"> as per Existing/Committed System 	<ul style="list-style-type: none"> as per Existing/Committed System 	<ul style="list-style-type: none"> as per Existing/Committed System
IC&I Reuse <ul style="list-style-type: none"> Reuse by IC&I generators, through the Canadian, Provincial and local waste exchange programs Community-based reuse programs and Community Recycling Centres with reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Use of refillable containers (refillable bottles, refillable pails or drums) Use of re-usable packaging (e.g. reusable plastic and wood pallets) 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effect noted 	<ul style="list-style-type: none"> expand promotion/education to ensure compliance with regulations and encourage voluntary recycling 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effect noted

IC&I Extended 3Rs System, Reliability, Proven Technology (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Reduction <ul style="list-style-type: none"> • Voluntary waste reduction actions by IC&I generators • Voluntary reduction of packaging waste by the year 2000 (NAPP) - this includes reuse • <i>Mandatory development of waste reduction action plans by most IC&I generators (revision to 3Rs regulations)</i> • Mandatory development of packaging reduction action plans by designated major packaging generators (defined in 3Rs regulations) 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effect noted 	<ul style="list-style-type: none"> • expand promotion/education to ensure compliance with regulations and encourage voluntary recycling 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effect noted
IC&I Programs <ul style="list-style-type: none"> • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in private companies • <i>Mandatory waste audits by most IC&I generators (revision to 3Rs regulations)</i> • Mandatory packaging audits by designated major packaging generators (3Rs regulations) • Voluntary packaging reporting by packaging users (NAPP) 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effect noted 	<ul style="list-style-type: none"> • expand promotion/education to ensure compliance with regulations and encourage voluntary recycling 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effect noted

IC&I Extended 3Rs System, Reliability, Proven Technology (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Promotion & Education</p> <ul style="list-style-type: none"> Promotion/education programs focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality Promotion/education of IC&I waste reduction by non-profit organizations Promotion/education of IC&I waste reduction by associations <i>Mandatory posting of waste reduction plans for review by employees of most IC&I generators (revision to 3Rs regulations)</i> 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effect noted 	<ul style="list-style-type: none"> expand promotion/education to ensure compliance with regulations and encourage voluntary recycling 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effect noted

TABLE Q-1.3
IC&I EXTENDED 3RS REGULATIONS
GTA
SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: IC&I Extended 3Rs System
 CRITERIA GROUP: Service
 CRITERIA: Flexibility
 INDICATOR: Types & Range of Quantities of Wastes Accepted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection - Dry Wastes <ul style="list-style-type: none"> Mandatory source separation of designated materials by most IC&I generators in GTA (to capture generators of 90% of total IC&I waste - revision to 3Rs regulations) Voluntary source separation of dry recyclables by small IC&I generators Collection of source separated dry recyclables from the IC&I sector by private sector haulers and recyclers Curbside collection of IC&I recyclables in some areas by municipal forces IC&I depots at transfer stations for use by small business generators Community Recycling Centres for use by small quantity IC&I generators Landfill bans on specified materials (e.g. wood, tires, drywall, scrap metal, white goods, fine paper etc.) 	<ul style="list-style-type: none"> technology can handle majority of IC&I dry wastes, though some technical limitations particularly with plastics - low density/high volume make transport/storage difficult; also identification of plastic types haulers and operators will respond with added capacity to collect greater range and volumes of materials reluctance of some IC&I generators to source separate materials regulations still require manufacturing, sector to source separate longer list of materials success depends on effective identification of materials for source separation, and compliance with revised regulations 	<ul style="list-style-type: none"> expansion of range and quantity of materials collected requires support through promotion/education and market development efforts there is a need to ensure enforcement of landfill bans and private sector operation of facilities that are consistent with Certificates of Approval 	<ul style="list-style-type: none"> positive effect on waste diversion by increasing the number of companies required to recycle and therefore the quantity of materials diverted technology is flexible handling an increase in range and quantity of materials processing/marketing of some plastics likely to present problems

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Collection – Wet Wastes</p> <ul style="list-style-type: none"> • Voluntary source separation of IC&I generated organics • Separate collection of IC&I wet wastes 	<ul style="list-style-type: none"> • as per Existing/Committed System • possible increase in separation and collection of wet organic wastes as spin-off from extended source separation requirement for dry material though not specifically targetted (not reflected in diversion estimates) 	<ul style="list-style-type: none"> • promotion/education concerning proper source separation practices • increase promotion/education of advantages of source separation organics 	<ul style="list-style-type: none"> • as per Existing/Committed System • possible increase in separation and collection of wet organic wastes as spin-off from extended source separation requirement for dry material though not specifically targetted (not reflected in diversion estimates)
<p>IC&I Processing – Dry Wastes</p> <ul style="list-style-type: none"> • <i>Additional processing capacity for dry recyclables required</i> • Processing of specific dry materials (e.g. C&D wastes, wood, drywall) in specially designed facilities • Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned by the private sector and operated by private sector staff • Processing of IC&I sector recyclables in municipal MRFs • Processing of IC&I sector recyclables by small private sector recyclers 	<ul style="list-style-type: none"> • as per Existing/Committed System • private sector processing capacity will expand to handle additional quantities of materials requiring processing • some technical limitations on processing particularly with plastics - low density/light weight; also identification and separation of different plastic types - mixing plastic resins significantly complicates reprocessing • markets may not have flexibility to absorb all processed materials • subject to stockpiling of particular materials depending on market conditions – may increase under Extended 3Rs but also additional volumes may also create better market conditions • possible disposal of a percentage of contaminated recyclables • range of materials collected and processed by private sector will depend on availability of markets 	<ul style="list-style-type: none"> • market development support will be required to accommodate increase quantity of materials • innovative end uses should be developed to ensure diversion 	<ul style="list-style-type: none"> • increase in range and quantity of materials processed likely, with positive effect on waste diversion

IC&I Extended 3Rs System, Flexibility, Types and Quantities (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Processing – Wet Wastes <ul style="list-style-type: none"> Centralized windrow composting of source-separated IC&I organics On-site composting of source separated organics generated by the IC&I sector Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector 	<ul style="list-style-type: none"> as per Existing/Committed System possible increase in wet wastes for processing corresponding to required source separation of dry wastes - not reflected in diversion estimates 	<ul style="list-style-type: none"> as per Existing/Committed System support for market development efforts for end products 	<ul style="list-style-type: none"> as per Existing/Committed System technology is flexible potential to increase quantity of wet wastes diverted depends on quality of end products, and willingness to source separate wet organics wastes
IC&I Reuse <ul style="list-style-type: none"> Reuse by IC&I generators, through the Canadian, Provincial and local waste exchange programs Community-based reuse programs and Community Recycling Centres with reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Use of refillable containers (refillable bottles, refillable pails or drums) Use of re-usable packaging (e.g. reusable plastic and wood pallets) 	<ul style="list-style-type: none"> as per Existing/Committed System scope for increasing reuse of material increased number of establishments subject to requirement of packaging and waste audits and waste reduction plans potentially will increase identification of reuse opportunities positively affecting diversion some limitations on reuse applications due to health/safety concerns 	<ul style="list-style-type: none"> as per Existing/Committed System increase of promotion/education of options available to generators support of innovation for reusable products and programs 	<ul style="list-style-type: none"> as per Existing/Committed System technology is flexible to handle wide range of products and well-suited to expand to handle greater quantities

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Reduction</p> <ul style="list-style-type: none"> • Voluntary waste reduction actions by IC&I generators • Voluntary reduction of packaging waste by the year 2000 (NAPP) - this includes reuse • <i>Mandatory development of waste reduction action plans by most IC&I generators (revision to 3Rs regulations)</i> • Mandatory development of packaging reduction action plans by designated major packaging generators (defined in 3Rs regulations) 	<ul style="list-style-type: none"> • as per Existing/Committed System • innovations in packaging can focus on lightweighting and material reuse and present significant reduction opportunities • increased number of packaging audits and waste reduction plans required by Extended 3Rs regulation will likely indicate reduction opportunities for some waste materials 	<ul style="list-style-type: none"> • as per Existing/Committed System • increase the promotion/education of the range of reduction opportunities 	<ul style="list-style-type: none"> • as per Existing/Committed System • increased coverage of regulations has potential to result in identification of greater reduction opportunities with positive affect on waste diversion
<p>IC&I Programs</p> <ul style="list-style-type: none"> • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in private companies • <i>Mandatory waste audits by most IC&I generators (revision to 3Rs regulations)</i> • Mandatory packaging audits by designated major packaging generators (3Rs regulations) • Voluntary packaging reporting by packaging users (NAPP) 	<ul style="list-style-type: none"> • as per Existing/Committed System • increased number of organizations (over system 2) having such programs may identify opportunities for diversion of a wider range and quantity of wastes 	<ul style="list-style-type: none"> • as per Existing/Committed System • facilitate and provide technical support to establish waste audit and workplan programs for IC&I generators • promotion of market development as part of waste reduction plans where appropriate 	<ul style="list-style-type: none"> • as per Existing/Committed System • increasing the coverage of the regulations increases the number of diversion programs with likely result of greater opportunities for waste diversion being identified

IC&I Extended 3Rs System, Flexibility, Types and Quantities (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Promotion & Education</p> <ul style="list-style-type: none"> • Promotion/education programs focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality • Promotion/education of IC&I waste reduction by non-profit organizations • Promotion/education of IC&I waste reduction by associations • <i>Mandatory posting of waste reduction plans for review by employees of most IC&I generators (revision to 3Rs regulations)</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System • increased number of establishments subject to mandatory posting of waste reduction plans for employee review can positively affect diversion at all stages 	<ul style="list-style-type: none"> • as per Existing/Committed System • significantly extend promotion/education services that focus IC&I generators on the range of materials and opportunities available • focus should also be directed at procurement of recycled content goods and products that will help with the demand side of the end markets 	<ul style="list-style-type: none"> • as per Existing/Committed System • increasing education initiatives required by Extended Regulations have potentially positive effect on waste diversion

TABLE Q-1.3
IC&I EXTENDED 3RS REGULATIONS
GTA
SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: IC&I Extended 3Rs System
 CRITERIA GROUP: Service
 CRITERIA: Performance
 INDICATOR: Quantity Diverted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection - Dry Wastes <ul style="list-style-type: none"> Mandatory source separation of designated materials by most IC&I generators in GTA (to capture generators of 90% of total IC&I waste - revision to 3Rs regulations) Voluntary source separation of dry recyclables by small IC&I generators Collection of source separated dry recyclables from the IC&I sector by private sector haulers and recyclers Curbside collection of IC&I recyclables in some areas by municipal forces IC&I depots at transfer stations for use by small business generators Community Recycling Centres for use by small quantity IC&I generators Landfill bans on specified materials (e.g. wood, tires, drywall, scrap metal, white goods, fine paper etc.) 	<ul style="list-style-type: none"> extending mandatory source separation of dry recyclables potentially results in significant diversion from landfill estimated to divert dry materials representing 46% of IC&I waste, from landfill success depends on effective design of regulations to identify and regulate establishments which generate most (90%) of IC&I waste markets must be available to achieve diversion 	<ul style="list-style-type: none"> continue promotion/education regarding source separation for 3Rs support development of markets 	<ul style="list-style-type: none"> extending mandatory source separation of dry recyclables potentially results in significant diversion from landfill estimated to divert dry materials representing 46% of IC&I waste, from landfill success depends on effective design of regulations to identify and regulate establishments which generate most (90%) of IC&I waste markets must be available to achieve diversion

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Wet Wastes <ul style="list-style-type: none"> Voluntary source separation of IC&I generated organics Separate collection of IC&I wet wastes 	<ul style="list-style-type: none"> as per Existing/Committed System possible increase in separation and collection of wet organic wastes as spin-off from extending source separation requirements for dry materials though not specifically targetted (not reflected in diversion estimates) 	<ul style="list-style-type: none"> as per Existing/Committed System continue promotion/education regarding source separation of wet wastes encourage effective source separation of wet organic waste to ensure marketability of end products 	<ul style="list-style-type: none"> as per Existing/Committed System possible increase in separation and collection of wet organic wastes as spin-off from extending source separation requirements for dry materials though not specifically targetted (not reflected in diversion estimates)
IC&I Processing – Dry Wastes <ul style="list-style-type: none"> <i>Additional processing capacity for dry recyclables required</i> Processing of specific dry materials (e.g. C&D wastes, wood, drywall) in specially designed facilities Processing centres for a wide range of dry recyclables collected from the IC&I sector, owned by the private sector and operated by private sector staff Processing of IC&I sector recyclables in municipal MRFs Processing of IC&I sector recyclables by small private sector recyclers 	<ul style="list-style-type: none"> increased mandatory source separation and audits results in increased processing of dry wastes and has a positive affect on diversion of dry recyclables potential diversion of 46% of dry recyclables from landfills diversion depends on markets for products: potentially recoverable materials often sent to landfill when market not strong diversion at processing stage depends on contamination of dry recyclables 	<ul style="list-style-type: none"> continue/extend promotion of source separation development of markets for dry waste materials develop effective technology and end markets for all plastics 	<ul style="list-style-type: none"> increased mandatory source separation and audits results in increased processing of dry wastes and has a positive affect on diversion of dry recyclables potential diversion of 46% of dry recyclables from landfills

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Processing – Wet Wastes <ul style="list-style-type: none"> Centralized windrow composting of source-separated IC&I organics On-site composting of source separated organics generated by the IC&I sector Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector 	<ul style="list-style-type: none"> as per Existing/Committed System possible increase in processing requirements for wet wastes as spin-off from source separation and audit requirements for dry materials - not reflected in diversion estimates 	<ul style="list-style-type: none"> promotion/education regarding source separation of wet wastes encourage effective source separation of materials to enhance marketability of wet organic waste products 	<ul style="list-style-type: none"> possible increase in processing requirements for wet wastes as spin-off from corresponding to source separation and audit requirements for dry materials - not reflected in diversion estimates
IC&I Reuse <ul style="list-style-type: none"> Reuse by IC&I generators, through the Canadian, Provincial and local waste exchange programs Community-based reuse programs and Community Recycling Centres with reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Use of refillable containers (refillable bottles, refillable pails or drums) Use of re-usable packaging (e.g. reusable plastic and wood pallets) 	<ul style="list-style-type: none"> as per Existing/Committed System increased number of establishments subject to requirements of regulations may result in greater reuse initiatives difficult to quantify reuse effect 	<ul style="list-style-type: none"> increase promotion of potential for reuse of wastes support innovation for reusable items 	<ul style="list-style-type: none"> potential for increased waste diversion and reduced waste disposal - difficult to quantify

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Reduction</p> <ul style="list-style-type: none"> • Voluntary waste reduction actions by IC&I generators • Voluntary reduction of packaging waste by the year 2000 (NAPP) - this includes reuse • <i>Mandatory development of waste reduction action plans by most IC&I generators (revision to 3Rs regulations)</i> • Mandatory development of packaging reduction action plans by designated major packaging generators (defined in 3Rs regulations) 	<ul style="list-style-type: none"> • increased coverage of regulations likely to have positive effect on diversion through waste reduction • difficult to quantify waste reduction effect, though on-going assessment of NAPP 	<ul style="list-style-type: none"> • promotion of potential for waste reduction • facilitate organization efforts for waste reduction • support for innovation in waste reduction • develop monitoring system to measure impacts 	<ul style="list-style-type: none"> • potential positive effect on waste diversion - difficult to quantify
<p>IC&I Programs</p> <ul style="list-style-type: none"> • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in private companies • <i>Mandatory waste audits by most IC&I generators (revision to 3Rs regulations)</i> • Mandatory packaging audits by designated major packaging generators (3Rs regulations) • Voluntary packaging reporting by packaging users (NAPP) 	<ul style="list-style-type: none"> • increased coverage of regulations likely to have positive effect on diversion through increased awareness of opportunities for waste reduction • difficult to quantify waste reduction and diversion impacts • on-going assessment of programs toward NAPP goals 	<ul style="list-style-type: none"> • promotion/education regarding potential of 3Rs programs • develop monitoring system to measure impacts 	<ul style="list-style-type: none"> • potential positive affect on waste diversion and waste reductions - difficult to quantify on large scale

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Promotion & Education</p> <ul style="list-style-type: none"> Promotion/education programs focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality Promotion/education of IC&I waste reduction by non-profit organizations Promotion/education of IC&I waste reduction by associations <i>Mandatory posting of waste reduction plans for review by employees of most IC&I generators (revision to 3Rs regulations)</i> 	<ul style="list-style-type: none"> generally believed to have positive effects on waste diversion increased coverage of regulations likely to have positive effect on diversion difficult to quantify affect of promotion/education on waste diversion 	<ul style="list-style-type: none"> significantly extend existing promotion/education as appropriate to explain requirements of extended 3Rs regulations and encourage compliance and voluntary recycling 	<ul style="list-style-type: none"> potential positive affect on waste diversion and reduction - difficult to quantify

TABLE Q-1.4
IC&I EXPANDED 3RS REGULATIONS
GTA
SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: IC&I Expanded 3Rs System
 CRITERIA: Reliability
 INDICATOR: Proven Technology

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Dry Wastes <ul style="list-style-type: none"> • Voluntary source separation of dry recyclables by some small IC&I generators • <i>Mandatory source separation of expanded list of designated materials by most IC&I generators (to capture generators of 90% of total IC&I waste - revision to 3Rs regulations)</i> • Collection of source separated dry recyclables from the IC&I sector by private sector haulers and recyclers • Curbside collection of IC&I recyclables in some areas by municipal forces • IC&I depots at transfer stations for use by small business generators • Community Recycling Centres for use by small quantity IC&I generators • Landfill bans on specified materials (e.g. wood, tires, drywall, scrap metal, white goods, fine paper etc.) 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • no additional effect noted 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • no additional required 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • no additional effect noted

IC&I Expanded 3Rs System, Reliability, Proven Technology (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Wet Wastes <ul style="list-style-type: none"> • Voluntary source separation of IC&I generated organics • Separate collection of IC&I wet wastes 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • no additional effect noted 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • no additional required 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • no additional effect noted
IC&I Processing – Dry Wastes <ul style="list-style-type: none"> • <i>Additional processing capacity for wider list of dry materials required</i> • Processing of specific dry materials (e.g. C&D wastes, wood, drywall) in specially designed facilities • Processing centres for dry recyclables collected from the IC&I sector, owned by the private sector and operated by private sector staff • Processing of IC&I sector recyclables in municipal MRFs • Processing of IC&I sector recyclables by small private sector recyclers 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • technical limits for some waste streams and materials (e.g. mixed plastics) • range of materials collected and processed by private sector will depend on availability of markets - markets for some materials included for extensive source separation not well-developed (e.g. boxboard, many plastics and glass) • reprocessing capacity may not exist locally (eg. polycoat containers) so active market identification required 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • develop/stabilize markets - particularly plastics and boxboard • enforcement of private sector processing facilities to ensure compliance with Certificates of Approval • support development of technology for processing all plastics economically 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • proven technology for most materials contributing to increased diversion for reprocessing and reuse

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Processing – Wet Wastes <ul style="list-style-type: none"> Centralized windrow composting of source-separated IC&I organics On-site composting of source separated organics generated by the IC&I sector Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional required 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted
IC&I Reuse <ul style="list-style-type: none"> Reuse by IC&I generators, through the Canadian, Provincial and local waste exchange programs Community-based reuse programs and Community Recycling Centres with reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Use of refillable containers (refillable bottles, refillable pails or drums) Use of re-usable packaging (e.g. reusable plastic and wood pallets) 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional required 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted

IC&I Expanded 3Rs System, Reliability, Proven Technology (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Reduction <ul style="list-style-type: none"> • Voluntary waste reduction actions by small IC&I generators • Voluntary reduction of packaging waste by the year 2000 (NAPP) - this includes reuse • <i>Mandatory development of waste reduction action plans by most IC&I generators (revision to 3Rs regulations)</i> • Mandatory development of packaging reduction action plans by designated major packaging generators (defined in 3Rs regulations) 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • no additional effect noted 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • no additional required 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • no additional effect noted
IC&I Programs <ul style="list-style-type: none"> • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in private companies • <i>Mandatory waste audits by most IC&I generators (revision to 3Rs regulations)</i> • Mandatory packaging audits by designated major packaging generators (3Rs regulations) • Voluntary packaging reporting by packaging users (NAPP) 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • no additional effect noted 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • no additional required 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • no additional effect noted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Promotion & Education <ul style="list-style-type: none"> Promotion/education programs focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality Promotion/education of IC&I waste reduction by non-profit organizations Promotion/education of IC&I waste reduction by associations <i>Mandatory posting of waste reduction plans for review by employees of most IC&I generators (revision to 3Rs regulations)</i> 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional required 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted

TABLE Q-1.4
IC&I EXPANDED 3RS REGULATIONS
GTA
SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: IC&I Expanded 3Rs System
 CRITERIA GROUP: Service
 CRITERIA: Flexibility
 INDICATOR: Types and Range of Quantities of Waste Accepted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection - Dry Wastes <ul style="list-style-type: none"> Voluntary source separation of dry recyclables by some small IC&I generators <i>Mandatory source separation of expanded list of designated materials by most IC&I generators (to capture generators of 90% of total IC&I waste - revision to 3Rs regulations)</i> Collection of source separated dry recyclables from the IC&I sector by private sector haulers and recyclers Curbside collection of IC&I recyclables in some areas by municipal forces IC&I depots at transfer stations for use by small business generators Community Recycling Centres for use by small quantity IC&I generators Landfill bans on specified materials (e.g. wood, tires, drywall, scrap metal, white goods, fine paper etc.) 	<ul style="list-style-type: none"> technology can handle majority of IC&I dry wastes, though some technical limitations particularly with plastics - low density/high volume make transport/storage difficult; also identification of plastic types added mixed paper to list of mandatory source-separated materials number of establishments which are required to source separate long list of materials will increase from system 3 (manufacturing) to cover all sectors. This will have potential positive effect on quantities of those materials collected haulers and operators will respond with added range and volumes of materials collected reluctance of some IC&I generators to source separate materials success depends on effective identification of materials for source separation 	<ul style="list-style-type: none"> expansion of range and quantity of materials collected requires support through promotion/education there is a need to ensure enforcement of landfill bans and private sector operation of facilities that are consistent with Certificates of Approval significant market development effort required to ensure that collected wastes are diverted 	<ul style="list-style-type: none"> positive effect on diversion by increasing the number of companies required to recycle an expanded list of materials and therefore increase the quantity of materials diverted technology is flexible handling an increase in range and quantity of materials most dry recyclable materials targetted processing/marketing of some plastics likely to present problems

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Wet Wastes <ul style="list-style-type: none"> Voluntary source separation of IC&I generated organics Separate collection of IC&I wet wastes 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional required 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted
IC&I Processing – Dry Wastes <ul style="list-style-type: none"> <i>Additional processing capacity for wider list of dry materials required</i> Processing of specific dry materials (e.g. C&D wastes, wood, drywall) in specially designed facilities Processing centres for dry recyclables collected from the IC&I sector, owned by the private sector and operated by private sector staff Processing of IC&I sector recyclables in municipal MRFs Processing of IC&I sector recyclables by small private sector recyclers 	<ul style="list-style-type: none"> as per Existing/Committed System private sector processing capacity will increase to handle additional quantities of materials collected some technical limitations on processing particularly with plastics - low density/light weight; also identification and separation of different plastic types - mixing plastic resins significantly complicates reprocessing markets may not have flexibility to absorb all processed materials subject to stockpiling of particular materials depending on market conditions may increase under Expanded 3Rs but also additional volume may also create better market conditions possible disposal of a percentage of contaminated recyclables range of materials collected and processed by private sector will depend on availability of markets 	<ul style="list-style-type: none"> market development support will be required to accommodate increased quantity of materials - particularly plastics and mixed fibres such as boxboard 	<ul style="list-style-type: none"> increase in range and quantity of materials processed likely with positive effect on waste diversion

IC&I Expanded 3Rs System, Flexibility, Types and Quantities (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Processing – Wet Wastes <ul style="list-style-type: none"> Centralized windrow composting of source-separated IC&I organics On-site composting of source separated organics generated by the IC&I sector Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional required 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted
IC&I Reuse <ul style="list-style-type: none"> Reuse by IC&I generators, through the Canadian, Provincial and local waste exchange programs Community-based reuse programs and Community Recycling Centres with reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Use of refillable containers (refillable bottles, refillable pails or drums) Use of re-usable packaging (e.g. reusable plastic and wood pallets) 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional required 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Reduction <ul style="list-style-type: none"> • Voluntary waste reduction actions by small IC&I generators • Voluntary reduction of packaging waste by the year 2000 (NAPP) - this includes reuse • <i>Mandatory development of waste reduction action plans by most IC&I generators (revision to 3Rs regulations)</i> • Mandatory development of packaging reduction action plans by designated major packaging generators (defined in 3Rs regulations) 	<ul style="list-style-type: none"> • as per Existing/Committed System • innovations in packaging will focus on lightweighting and material reuse and can present significant reduction opportunities • increased number of packaging audits and waste reduction plans required by Expanded 3Rs Regulations potentially will indicate reduction opportunities for a wider range of waste materials 	<ul style="list-style-type: none"> • as per Existing/Committed System • increase the promotion/education of the range of reduction opportunities 	<ul style="list-style-type: none"> • as per Existing/Committed System • increased coverage of regulations has potential to result in identification of greater reduction opportunities with positive affect on diversion and potential for cost savings
IC&I Programs <ul style="list-style-type: none"> • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in private companies • <i>Mandatory waste audits by most IC&I generators (revision to 3Rs regulations)</i> • Mandatory packaging audits by designated major packaging generators (3Rs regulations) • Voluntary packaging reporting by packaging users (NAPP) 	<ul style="list-style-type: none"> • as per Existing/Committed System • possible increase in number of organizations (over system 3) having programs and therefore identifying opportunities 	<ul style="list-style-type: none"> • as per Existing/Committed System • facilitate and provide technical support to establish waste audit and workplan programs for IC&I generators • promotion of market development (through purchasing specifications) as part of waste reduction plans where appropriate 	<ul style="list-style-type: none"> • as per Existing/Committed System • increasing the coverage of the regulations increases the number of diversion programs with likely result of greater opportunities for waste diversion identified

IC&I Expanded 3Rs System, Flexibility, Types and Quantities (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Promotion & Education</p> <ul style="list-style-type: none"> • Promotion/education programs focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality • Promotion/education of IC&I waste reduction by non-profit organizations • Promotion/education of IC&I waste reduction by associations • <i>Mandatory posting of waste reduction plans for review by employees of most IC&I generators (revision to 3Rs regulations)</i> 	<ul style="list-style-type: none"> • as per Existing/Committed System • increased number of establishments subject to mandatory posting of waste reduction plans for employee review can positively affect diversion at all stages 	<ul style="list-style-type: none"> • as per Existing/Committed System • significantly expand promotion/education services that focus IC&I generators on the range of materials and opportunities available • focus should also be directed at procurement of recycled content goods and products that will help with the demand side of end markets 	<ul style="list-style-type: none"> • as per Existing/Committed System • increasing education initiatives required by Expanded Regulations potentially positive effect on diversion

TABLE Q-1.4
IC&I EXPANDED 3RS REGULATIONS
GTA
SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: IC&I Expanded 3Rs System
 CRITERIA GROUP: Service
 CRITERIA: Performance
 INDICATOR: Quantity Diverted or Requiring Landfilling

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Dry Wastes <ul style="list-style-type: none"> Voluntary source separation of dry recyclables by some small IC&I generators <i>Mandatory source separation of expanded list of designated materials by most IC&I generators (to capture generators of 90% of total IC&I waste - revision to 3Rs regulations)</i> Collection of source separated dry recyclables from the IC&I sector by private sector haulers and recyclers Curbside collection of IC&I recyclables in some areas by municipal forces IC&I depots at transfer stations for use by small business generators Community Recycling Centres for use by small quantity IC&I generators Landfill bans on specified materials (e.g. wood, tires, drywall, scrap metal, white goods, fine paper etc.) 	<ul style="list-style-type: none"> expanding mandatory source separation of dry recyclables potentially results in significant diversion from landfill – estimated to divert approximately 54% dry recyclables from landfill success depends on effective design of regulations to identify and regulate establishments which generate most (90%) of IC&I waste (note: in this system 90% of most types of plastics, mixed paper and wood waste generated by all sectors has been targeted) markets must be available to achieve diversion 	<ul style="list-style-type: none"> continue promotion/education regarding source separation for 3Rs support development of markets 	<ul style="list-style-type: none"> expanding mandatory source separation of dry recyclables potentially results in significant diversion from landfill – estimated to divert approximately 54% dry recyclables from landfill success depends on effective design of regulations to identify and regulate establishments which generate most (90%) of IC&I waste markets must be available to achieve diversion
IC&I Collection – Wet Wastes <ul style="list-style-type: none"> Voluntary source separation of IC&I generated organics Separate collection of IC&I wet wastes 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Processing – Dry Wastes <ul style="list-style-type: none"> Additional processing capacity for wider list of dry materials required Processing of specific dry materials (e.g. C&D wastes, wood, drywall) in specially designed facilities Processing centres for dry recyclables collected from the IC&I sector, owned by the private sector and operated by private sector staff Processing of IC&I sector recyclables in municipal MRFs Processing of IC&I sector recyclables by small private sector recyclers 	<ul style="list-style-type: none"> increased mandatory source separation and audits results in increased processing of dry wastes and has a positive affect on diversion of dry recyclables potential diversion of approximately 54% dry recyclables from landfill diversion depends on markets for products: potentially recoverable materials often sent to landfill when market not strong diversion at processing stage depends on contamination of dry recyclables also some limitations in processing mixed plastics 	<ul style="list-style-type: none"> continue/extend promotion of source separation development of markets for dry waste materials critical to success of this system in diverting additional waste 	<ul style="list-style-type: none"> increased mandatory source separation and audits results in increased processing of dry wastes and has a positive affect on diversion of dry recyclables potential diversion of approximately 54% dry recyclables from landfill
IC&I Processing – Wet Wastes <ul style="list-style-type: none"> Centralized windrow composting of source-separated IC&I organics On-site composting of source separated organics generated by the IC&I sector Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Reuse <ul style="list-style-type: none"> Reuse by IC&I generators, through the Canadian, Provincial and local waste exchange programs Community-based reuse programs and Community Recycling Centres with reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Use of refillable containers (refillable bottles, refillable pails or drums) Use of re-usable packaging (e.g. reusable plastic and wood pallets) 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted
IC&I Reduction <ul style="list-style-type: none"> Voluntary waste reduction actions by small IC&I generators Voluntary reduction of packaging waste by the year 2000 (NAPP) - this includes reuse <i>Mandatory development of waste reduction action plans by most IC&I generators (revision to 3Rs regulations)</i> Mandatory development of packaging reduction action plans by designated major packaging generators (defined in 3Rs regulations) 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Extended 3Rs Regulations System no additional effect noted

IC&I Expanded 3Rs System, Performance, Quantities (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Programs <ul style="list-style-type: none"> • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in private companies • <i>Mandatory waste audits by most IC&I generators (revision to 3Rs regulations)</i> • Mandatory packaging audits by designated major packaging generators (3Rs regulations) • Voluntary packaging reporting by packaging users (NAPP) 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • no additional effect noted 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • no additional effect noted 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • no additional effect noted
IC&I Promotion & Education <ul style="list-style-type: none"> • Promotion/education programs focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality • Promotion/education of IC&I waste reduction by non-profit organizations • Promotion/education of IC&I waste reduction by associations • <i>Mandatory posting of waste reduction plans for review by employees of most IC&I generators (revision to 3Rs regulations)</i> 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • no additional effect noted 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • expand promotion/education to ensure awareness of and compliance with regulations 	<ul style="list-style-type: none"> • as per Extended 3Rs Regulations System • no additional effect noted

TABLE Q-1.5
IC&I EXPANDED 3RS WITH ORGANICS SYSTEM
GTA
SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: IC&I Expanded 3Rs with Organics System
 CRITERIA GROUP: Service
 CRITERIA: Reliability
 INDICATOR: Proven Technology

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Dry Wastes <ul style="list-style-type: none"> • Voluntary source separation of dry recyclables by small IC&I generators • <i>Mandatory source separation of expanded list of designated materials by most generators (to capture generators of 90% of total IC&I waste - revision to 3Rs regulations)</i> • Collection of source separated dry recyclables from the IC&I sector by private sector haulers and recyclers • Curbside collection of IC&I recyclables in some areas by municipal forces • IC&I depots at transfer stations for use by small business generators • Community Recycling Centres for use by small quantity IC&I generators • Landfill bans on specified materials (e.g. wood, tires, drywall, scrap metal, white goods, fine paper etc.) 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional requirements 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted

IC&I Expanded 3Rs with Organics System, Reliability, Proven Technology (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Wet Wastes <ul style="list-style-type: none"> Mandatory source separation of wet wastes by designed IC&I generators (revision to 3Rs regulations) Voluntary source separation of IC&I generated organics Separate collection of IC&I wet wastes 	<ul style="list-style-type: none"> technologies proven for handling wet wastes extensive system of mandatory separation/collection of IC&I wet wastes not yet demonstrated on scale of GTA some generators will be reluctant to separate and store wet wastes because of odour, sanitation problems 	<ul style="list-style-type: none"> increase education/promotion to encourage separation and storage of wet wastes increase education/promotion to encourage effective separation of wet organics to enhance composting and other uses 	<ul style="list-style-type: none"> mandatory source separation regulations proven approach though implementation with extensive coverage (particularly for organics) not yet demonstrated expected to depend on commitment and measures to ensure compliance
IC&I Processing – Dry Wastes <ul style="list-style-type: none"> Additional processing capacity for dry recyclables Processing of specific dry materials (e.g. C&D wastes, wood, drywall) in specially designed facilities Processing centres for dry recyclables collected from the IC&I sector, owned by the private sector and operated by private sector staff Processing of IC&I sector recyclables in municipal MRFs Processing of IC&I sector recyclables by small private sector recyclers 	<ul style="list-style-type: none"> as per Expanded 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Expanded 3Rs Regulations System no additional requirements 	<ul style="list-style-type: none"> as per Expanded 3Rs Regulations System no additional effect noted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Processing – Wet Wastes</p> <ul style="list-style-type: none"> Centralized windrow composting of source-separated IC&I organics On-site composting of source separated organics generated by the IC&I sector Centralized composting of IC&I organics in in-vessel system Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector <i>New composting facility (in-vessel) for IC&I organics</i> 	<ul style="list-style-type: none"> proven technology some operational problems <ul style="list-style-type: none"> odour problems can be problematic product quality can be inconsistent not all IC&I wet wastes are compostable or suitable for other uses due to contaminants - effective source separation of organics required to ensure marketability compost quality standards may limit end uses of finished compost Market development required to lower costs and ensure maximum diversion 	<ul style="list-style-type: none"> encourage effective source separation of wet organics <ul style="list-style-type: none"> promotion/education and incentives required careful management of composting process market development required to optimally handle increased quantity of organics 	<ul style="list-style-type: none"> composting and rendering of food/organics waste is proven technology-significant mass/volume reduction achieved
<p>IC&I Reuse</p> <ul style="list-style-type: none"> Reuse by IC&I generators, through the Canadian, Provincial and local waste exchange programs Community-based reuse programs and Community Recycling Centres with reuse programs for small IC&I generators <i>Increased use of food wastes as animal feed</i> <i>Increased use of food waste for human consumption</i> <i>Increased landspreading of IC&I organics</i> Use of refillable containers such as packaging by businesses (refillable bottles, refillable pails or drums, etc.) Use of re-usable packaging (e.g. reusable plastic and wood pallets) 	<ul style="list-style-type: none"> as per Expanded 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Expanded 3Rs Regulations System no additional requirements 	<ul style="list-style-type: none"> as per Expanded 3Rs Regulations System no additional effect noted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Reduction <ul style="list-style-type: none"> • Voluntary waste reduction actions by small IC&I generators • Voluntary reduction of packaging waste by the year 2000 (NAPP) - this includes reuse • <i>Mandatory development of waste reduction action plans by most IC&I generators (revision to 3Rs regulations)</i> • Mandatory development of packaging reduction action plans by designated major packaging generators (defined in 3Rs regulations) 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional requirements 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted
IC&I Programs <ul style="list-style-type: none"> • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in small private companies • <i>Mandatory waste audits by most IC&I generators (revision to 3Rs regulations)</i> • Mandatory packaging audits by designated major packaging generators (3Rs regulations) • Voluntary packaging reporting by packaging users (NAPP) 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional requirements 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Promotion & Education <ul style="list-style-type: none"> Promotion/education programs focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality Promotion/education of IC&I waste reduction by non-profit organizations Promotion/education of IC&I waste reduction by associations <i>Mandatory posting of waste reduction plans for review by employees of most IC&I generators (revision to 3Rs regulations)</i> 	<ul style="list-style-type: none"> as per Expanded 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Expanded 3Rs Regulations System additional promotion/education required to ensure compliance with regulations, particularly focussing on organics 	<ul style="list-style-type: none"> as per Expanded 3Rs Regulations System no additional effect noted

TABLE Q-1.5
IC&I EXPANDED 3RS WITH ORGANICS SYSTEM
GTA
SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: IC&I Expanded 3Rs with Organics System
 CRITERIA GROUP: Service
 CRITERIA: Flexibility
 INDICATOR: Types and Range of Quantities of Wastes Accepted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Dry Wastes <ul style="list-style-type: none"> • Voluntary source separation of dry recyclables by small IC&I generators • <i>Mandatory source separation of expanded list of designated materials by most generators (to capture generators of 90% of total IC&I waste - revision to 3Rs regulations)</i> • Collection of source separated dry recyclables from the IC&I sector by private sector haulers and recyclers • Curbside collection of IC&I recyclables in some areas by municipal forces • IC&I depots at transfer stations for use by small business generators • Community Recycling Centres for use by small quantity IC&I generators • Landfill bans on specified materials (e.g. wood, tires, drywall, scrap metal, white goods, fine paper etc.) 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional requirements 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Wet Wastes <ul style="list-style-type: none"> <i>Mandatory source separation of wet wastes by designed IC&I generators (revision to 3Rs regulations)</i> Voluntary source separation of IC&I generated organics Separate collection of IC&I wet wastes 	<ul style="list-style-type: none"> additional mandatory separation of food and yard waste will increase range and quantity of wastes handled markets to handle additional organic materials may not be sufficient increased collection capacity will be required for wet organics 	<ul style="list-style-type: none"> further market development and increased collection capacity required 	<ul style="list-style-type: none"> requirement to separate increased quantity and range of materials - organics will have a positive effect on waste diversion
IC&I Processing – Dry Wastes <ul style="list-style-type: none"> <i>Additional processing capacity for dry recyclables</i> Processing of specific dry materials (e.g. C&D wastes, wood, drywall) in specially designed facilities Processing centres for dry recyclables collected from the IC&I sector, owned by the private sector and operated by private sector staff Processing of IC&I sector recyclables in municipal MRFs Processing of IC&I sector recyclables by small private sector recyclers 	<ul style="list-style-type: none"> as per Expanded 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Expanded 3Rs Regulations System no additional requirements 	<ul style="list-style-type: none"> as per Expanded 3Rs Regulations System no additional effect noted

IC&I Expanded 3Rs with Organics System, Flexibility, Types and Quantities (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Processing – Wet Wastes</p> <ul style="list-style-type: none"> Centralized windrow composting of source-separated IC&I organics On-site composting of source separated organics generated by the IC&I sector Centralized composting of IC&I organics in in-vessel system Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector <i>New composting facility (in-vessel) for IC&I organics</i> 	<ul style="list-style-type: none"> additional mandatory separation of food and yard waste will increase range and quantity of wastes processed increased processing capacity will be required, though existing planned expansions may be sufficient markets to handle additional organic materials may not be sufficient quality of wet waste affects the ability to produce quality end products 	<ul style="list-style-type: none"> further market development required for finished compost promotion/education concerning proper source separation practices 	<ul style="list-style-type: none"> requirement to process increased quantity and range of materials - organics will have a positive effect on waste diversion
<p>IC&I Reuse</p> <ul style="list-style-type: none"> Reuse by IC&I generators, through the Canadian, Provincial and local waste exchange programs Community-based reuse programs and Community Recycling Centres with reuse programs for small IC&I generators <i>Increased use of food wastes as animal feed</i> <i>Increased use of food waste for human consumption</i> <i>Increased landspreading of IC&I organics</i> Use of refillable containers such as packaging by businesses (refillable bottles, refillable pails or drums, etc.) Use of re-usable packaging (e.g. reusable plastic and wood pallets) 	<ul style="list-style-type: none"> as per Expanded 3Rs Regulations System use of food waste for animal feed, landspreading and human consumption likely to increase 	<ul style="list-style-type: none"> as per Expanded 3Rs Regulations System promotion/education of opportunities for reuse required 	<ul style="list-style-type: none"> as per Expanded 3Rs Regulations System use of food waste for animal feed, landspreading and human consumption likely to increase

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Reduction <ul style="list-style-type: none"> • Voluntary waste reduction actions by small IC&I generators • Voluntary reduction of packaging waste by the year 2000 (NAPP) - this includes reuse • <i>Mandatory development of waste reduction action plans by most IC&I generators (revision to 3Rs regulations)</i> • Mandatory development of packaging reduction action plans by designated major packaging generators (defined in 3Rs regulations) 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional requirements 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted
IC&I Programs <ul style="list-style-type: none"> • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in small private companies • <i>Mandatory waste audits by most IC&I generators (revision to 3Rs regulations)</i> • Mandatory packaging audits by designated major packaging generators (3Rs regulations) • Voluntary packaging reporting by packaging users (NAPP) 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional requirements 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted

IC&I Expanded 3Rs with Organics System, Flexibility, Types and Quantities (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Promotion & Education</p> <ul style="list-style-type: none"> Promotion/education programs focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality Promotion/education of IC&I waste reduction by non-profit organizations Promotion/education of IC&I waste reduction by associations <i>Mandatory posting of waste reduction plans for review by employees of most IC&I generators (revision to 3Rs regulations)</i> 	<ul style="list-style-type: none"> as per Expanded 3Rs Regulations System no additional effect noted 	<ul style="list-style-type: none"> as per Expanded 3Rs Regulations System extra promotion/education required for effective source separation of organics 	<ul style="list-style-type: none"> as per Expanded 3Rs Regulations System no additional effect noted

TABLE Q-1.5
IC&I EXPANDED 3RS WITH ORGANICS SYSTEM
GTA
SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: IC&I Expanded 3Rs with Organics System
 CRITERIA GROUP: Service
 CRITERIA: Performance
 INDICATOR: Quantity Diverted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Dry Wastes <ul style="list-style-type: none"> • Voluntary source separation of dry recyclables by small IC&I generators • <i>Mandatory source separation of expanded list of designated materials by most generators (to capture generators of 90% of total IC&I waste - revision to 3Rs regulations)</i> • Collection of source separated dry recyclables from the IC&I sector by private sector haulers and recyclers • Curbside collection of IC&I recyclables in some areas by municipal forces • IC&I depots at transfer stations for use by small business generators • Community Recycling Centres for use by small quantity IC&I generators • Landfill bans on specified materials (e.g. wood, tires, drywall, scrap metal, white goods, fine paper etc.) 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional requirements 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Collection – Wet Wastes</p> <ul style="list-style-type: none"> • <i>Mandatory source separation of wet wastes by designed IC&I generators (revision to 3Rs regulations)</i> • Voluntary source separation of IC&I generated organics • Separate collection of IC&I wet wastes 	<ul style="list-style-type: none"> • expanding mandatory separation of wet organics (food and yard waste) potentially results in significant diversion from landfill – estimated diversion is 6.5% of IC&I waste • success depends on effective design of regulations of identify and regulate establishments which generate most (90%) of the IC&I food and yard waste • success also depends on effective source separation of these wastes to ensure marketability • increased collection capacity for wet wastes is likely required 	<ul style="list-style-type: none"> • education/promotion of effective source separation of organics to ensure marketability • active market development to ensure end uses for finished product 	<ul style="list-style-type: none"> • mandatory source separation and collection of wet organics has potential positive effect on waste diversion estimated to be 6.5% of IC&I waste
<p>IC&I Processing – Dry Wastes</p> <ul style="list-style-type: none"> • <i>Additional processing capacity for dry recyclables</i> • Processing of specific dry materials (e.g. C&D wastes, wood, drywall) in specially designed facilities • Processing centres for dry recyclables collected from the IC&I sector, owned by the private sector and operated by private sector staff • Processing of IC&I sector recyclables in municipal MRFs • Processing of IC&I sector recyclables by small private sector recyclers 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional requirements 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Processing – Wet Wastes</p> <ul style="list-style-type: none"> Centralized windrow composting of source-separated IC&I organics On-site composting of source separated organics generated by the IC&I sector Centralized composting of IC&I organics in in-vessel system Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector <i>New composting facility (in-vessel) for IC&I organics</i> 	<ul style="list-style-type: none"> expanding mandatory separation of wet organics (food and yard waste) potentially results in significant diversion from landfill – estimated diversion 6.5% of IC&I waste not all IC&I wet wastes are compostable or suitable for other uses due to contaminants - success depends on effective source separation of organics required to ensure marketability Market development required to lower costs and ensure maximum diversion 	<ul style="list-style-type: none"> education/promotion of effective source separation of organics to ensure marketability active market development to ensure adequate end use options for finished product requires careful management of processing facilities to minimize operational problems 	<ul style="list-style-type: none"> mandatory source separation and processing of wet organics has potential positive effect on waste diversion – estimated to be 6.5% of IC&I waste stream

IC&I Expanded 3Rs with Organics System, Performance (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Reuse</p> <ul style="list-style-type: none"> • Reuse by IC&I generators, through the Canadian, Provincial and local waste exchange programs • Community-based reuse programs and Community Recycling Centres with reuse programs for small IC&I generators • <i>Increased use of food wastes as animal feed</i> • <i>Increased use of food waste for human consumption</i> • <i>Increased landspreading of IC&I organics</i> • Use of refillable containers such as packaging by businesses (refillable bottles, refillable pails or drums, etc.) • Use of re-usable packaging (e.g. reusable plastic and wood pallets) 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • additional increase in reuse of food waste difficult to quantify and is not reflected specifically in diversion estimates 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional requirements 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • additional increase in reuse of food waste difficult to quantify and is not reflected specifically in diversion estimates
<p>IC&I Reduction</p> <ul style="list-style-type: none"> • Voluntary waste reduction actions by small IC&I generators • Voluntary reduction of packaging waste by the year 2000 (NAPP) - this includes reuse • <i>Mandatory development of waste reduction action plans by most IC&I generators (revision to 3Rs regulations)</i> • Mandatory development of packaging reduction action plans by designated major packaging generators (defined in 3Rs regulations) 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional requirements 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Programs <ul style="list-style-type: none"> • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in small private companies • <i>Mandatory waste audits by most IC&I generators (revision to 3Rs regulations)</i> • Mandatory packaging audits by designated major packaging generators (3Rs regulations) • Voluntary packaging reporting by packaging users (NAPP) 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional requirements 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted
IC&I Promotion & Education <ul style="list-style-type: none"> • Promotion/education programs focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality • Promotion/education of IC&I waste reduction by non-profit organizations • Promotion/education of IC&I waste reduction by associations • <i>Mandatory posting of waste reduction plans for review by employees of most IC&I generators (revision to 3Rs regulations)</i> 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • significantly increased promotion/education program focussing on diversion options for IC&I organics – difficult to quantify efforts 	<ul style="list-style-type: none"> • as per Expanded 3Rs Regulations System • no additional effect noted

TABLE Q-1.6
IC&I NO UNPROCESSED WASTE TO LANDFILL SYSTEM
GTA
SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: IC&I No Unprocessed Waste To Landfill System
 CRITERIA GROUP: Service
 CRITERIA: Reliability
 INDICATOR: Proven Technology

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Dry Wastes <ul style="list-style-type: none"> • Voluntary source separation of dry recyclables by small IC&I generators • Mandatory source separation of designated materials by designated major generators (3Rs regulations) • Collection of source separated dry recyclables from the IC&I sector by private sector haulers and recyclers • Curbside collection of IC&I recyclables in some areas by municipal forces • IC&I depots at transfer stations for use by small business generators • Community Recycling Centres for use by small quantity IC&I generators • Landfill bans on specified materials (e.g. wood, tires, drywall, scrap metal, white goods, fine paper etc.) • <i>Mandatory processing of all dry wastes prior to landfilling (new policy required by Ontario, or condition on C of A for landfill)</i> 	<ul style="list-style-type: none"> • proven technology for handling wastes - variety of services could be expected varying from extensive source separation of a wide range of materials to a two-bin wet-dry system • mixed dry waste collection programs currently are operating in GTA • some limitations on collection and separation of plastics - low density/high volume, complications in processing mixed plastics • contamination of materials may be greater under mixed waste programs than under source separation programs - this may limit diversion of specific materials • increase in number of IC&I generators that will be required to comply with regulations and pay for collection and processing • flow controls are very controversial and there is significant resistance to their implementation • success depends on compliance and measures to ensure compliance 	<ul style="list-style-type: none"> • promotion/education of 3Rs potential • continued promotion of source separation to improve recovery rates • aggressive market development • provide assurances and incentives to private haulers/processors to encourage participation 	<ul style="list-style-type: none"> • proven technologies for handling waste • effect of legislation on scale required in GTA not yet demonstrated – flow controls are very controversial and there is significant resistance to their implementation • expected to depend on commitment and measures to ensure compliance

IC&I No Unprocessed Waste To Landfill System, Reliability, Proven Technologies (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Dry Wastes (cont'd)	<ul style="list-style-type: none"> • regulations prohibiting unprocessed waste being disposed in landfills not proven - Minneapolis has regulations requiring processing of waste in public or other designated facilities and have experienced resistance from haulers and recyclers to such waste flow controls; a significant fraction of the waste stream is incinerated to achieve diversion. the State of Minnesota has prohibited disposal of waste in unlined landfills, of which only two were to remain by the end of 1993. • responsibility for effective separation falls on haulers/recyclers • responsibility for policing falls on landfill facilities and regions through C of As and designations 		
IC&I Collection – Wet Wastes <ul style="list-style-type: none"> • Voluntary source separation of IC&I generated organics • Separate collection of some IC&I wet wastes 	<ul style="list-style-type: none"> • proven technology for handling wet wastes • extensive system of separation/collection of IC&I wet wastes (on scale of GTA) not yet demonstrated • some generators will be reluctant to separate and store wet wastes • effectiveness of separation of wet wastes will effect end-product use and diversion • responsibility for effective separation falls on haulers/recyclers • success depends on level of compliance and measures to ensure compliance and voluntary source separation of organics 	<ul style="list-style-type: none"> • increase education/promotion to encourage separation and storage of wet wastes • increase education/promotion to encourage effective separation of wet organics to enhance composting and other uses • provide assurances and incentives to private haulers/processors to encourage participation 	<ul style="list-style-type: none"> • proven technology for handling waste • effect of legislation on scale required for GTA not yet demonstrated – flow controls are very controversial and there is significant resistance to their implementation • expected to depend on commitment and measures to ensure compliance

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Processing – Dry Wastes</p> <ul style="list-style-type: none"> • Processing of specific dry materials (e.g. C&D wastes, wood, drywall) in specially designed facilities. • Processing centres for dry recyclables collected from the IC&I sector, owned by the private sector and operated by private sector staff • Processing of IC&I sector recyclables in municipal MRFs • Processing of IC&I sector recyclables by small private sector recyclers • <i>Mandatory processing of all dry wastes prior to landfilling (new policy)</i> • <i>Mandatory processing of all mixed wastes prior to landfilling (new policy)</i> • <i>Additional facilities for processing dry recyclables</i> • <i>Additional facilities for processing mixed wastes</i> 	<ul style="list-style-type: none"> • proven technology for source separated materials • mixed dry waste collection programs and processing facilities currently are operating in GTA • technical limits for some waste streams and materials (e.g. construction & demolition wastes, mixed plastics, multi-material items) • contamination of materials may be greater under mixed waste programs than under source separation programs • possible disposal of a percentage of contaminated recyclables • markets may not be able to absorb all materials processed – subject to stockpiling of particular materials depending on market conditions • range of materials collected and processed by private sector will depend on availability of markets - markets for some material not well- developed (e.g. boxboard, many plastics and glass) • reprocessing capacity may not exist locally (eg. polycoat containers) so active market identification required • some operational problems – e.g. mechanical breakdown, product quality • responsibility for policing falls on haulers, recyclers and landfills • responsibility for policing falls on landfill facilities and regions through C of As and designations 	<ul style="list-style-type: none"> • develop/stabilize markets and end uses for a number of processed wastes generated by this policy • promotion/education to encourage maximum source separation to minimize contamination • include residual controls on facilities to ensure maximum diversion 	<ul style="list-style-type: none"> • proven technology with positive effect on waste diversion for potential reprocessing and reuse • some technical limits for certain materials such as mixed plastics and C&D

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Processing – Wet Wastes</p> <ul style="list-style-type: none"> Centralized windrow composting of source-separated IC&I organics On-site composting of source separated organics generated by the IC&I sector Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector <i>New composting facility (in-vessel) for IC&I organics</i> 	<ul style="list-style-type: none"> proven technology extensive system of processing organics not yet demonstrated on scale of GTA some operational problems <ul style="list-style-type: none"> odour problems can be problematic product quality can be inconsistent not all IC&I wet wastes are compostable or suitable for other uses due to contaminant materials - effective source separation of organics required to ensure maximum marketability compost quality standards may limit end uses of finished compost Market development required to lower costs and ensure maximum diversion 	<ul style="list-style-type: none"> encourage effective source separation of wet organics <ul style="list-style-type: none"> promotion/education and incentives required careful management of composting process market development required to optimally handle increased quantity of organics 	<ul style="list-style-type: none"> proven technology-significant mass/volume reduction achieved in composting and diversion through other processing such as rendering greatest benefit when product marketable
<p>IC&I Reuse</p> <ul style="list-style-type: none"> Reuse by IC&I generators, through the Canadian, Provincial and local waste exchange programs Community-based reuse programs and Community Recycling Centres with reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Use of refillable containers (refillable bottles, refillable pails or drums, etc) Use of re-usable packaging (e.g. reusable plastic and wood pallets, etc.) 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effect noted 	<ul style="list-style-type: none"> as per Existing/Committed System no additional requirements 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effect noted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Reduction <ul style="list-style-type: none"> • voluntary waste reduction actions by small IC&I generators. • Voluntary reduction of packaging waste by the year 2000 (NAPP) - this includes reuse • Mandatory development of waste reduction action plans by designated major IC&I generators (defined in 3Rs regulations). • Mandatory development of packaging reduction action plans by designated major packaging generators (defined in 3Rs regulations). 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effect noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional requirements 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effect noted
IC&I Programs <ul style="list-style-type: none"> • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in small private companies • Mandatory waste audits by designated major IC&I generators (defined in 3Rs regulations) • Mandatory packaging audits by designated major packaging generators (3Rs regulations) • Voluntary packaging reporting by packaging users (NAPP) 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effect noted 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional requirements 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional effect noted

IC&I No Unprocessed Waste To Landfill System, Reliability, Proven Technology (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Promotion & Education</p> <ul style="list-style-type: none"> Promotion/education programs focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality Promotion/education of IC&I waste reduction by non-profit organizations Promotion/education of IC&I waste reduction by associations Mandatory posting of waste reduction plans for review by employees of designated major IC&I generators (3Rs regulations) 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effect noted 	<ul style="list-style-type: none"> as per Existing/Committed System additional promotion/education required to ensure awareness of an compliance with regulations 	<ul style="list-style-type: none"> as per Existing/Committed System no additional effect noted

TABLE Q-1.6
IC&I NO UNPROCESSED WASTE TO LANDFILL SYSTEM
GTA
SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: IC&I No Unprocessed Waste To Landfill
 CRITERIA GROUP: Service
 CRITERIA: Flexibility
 INDICATOR: Types and Range of Quantities of Wastes Accepted

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Dry Wastes <ul style="list-style-type: none"> Voluntary source separation of dry recyclables by small IC&I generators Mandatory source separation of designated materials by designated major generators (3Rs regulations) Collection of source separated dry recyclables from the IC&I sector by private sector haulers and recyclers Curbside collection of IC&I recyclables in some areas by municipal forces IC&I depots at transfer stations for use by small business generators Community Recycling Centres for use by small quantity IC&I generators Landfill bans on specified materials (e.g. wood, tires, drywall, scrap metal, white goods, fine paper etc.) Mandatory processing of all dry wastes prior to landfilling (new policy required by Ontario, or condition on C of A for landfill) 	<ul style="list-style-type: none"> technology can handle majority of IC&I dry wastes, though some technical limitations particularly with plastics - low density/high volume make transport/storage difficult; also identification plastic types contamination of materials may be greater under mixed waste programs than under source separation programs - this may limit diversion of specific materials increase in number of IC&I generators that will be required to comply with regulations has positive effect on range and amount of materials available for potential recovery quantities depend on compliance and measures to ensure compliance 	<ul style="list-style-type: none"> expansion of range and quantity of materials collected requires support through promotion/education and market development efforts or well as measures to ensure compliance 	<ul style="list-style-type: none"> positive effect on waste diversion by increasing the quantity of waste materials collected for processing technology is flexible handling increase in range and quantity of materials – all waste handled

IC&I No Unprocessed Waste To Landfill System, Flexibility, Types and Quantities (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Collection – Wet Wastes</p> <ul style="list-style-type: none"> • Voluntary source separation of IC&I generated organics • Separate collection of some IC&I wet wastes 	<ul style="list-style-type: none"> • as per Expanded 3Rs with Organics System • contamination of wet organics may be greater than under System 5 	<ul style="list-style-type: none"> • as per Expanded 3Rs with Organics System • further market development and increased collection capacity • encourage source separation of organics where possible 	<ul style="list-style-type: none"> • as per Expanded 3Rs with Organics System • requirement to separate wet wastes increases quantity of organics available for processing and possible diversion • if collected as mixed stream, finished compost quality may limit end use options and limit diversion
<p>IC&I Processing – Dry Wastes</p> <ul style="list-style-type: none"> • Processing of specific dry materials (e.g. C&D wastes, wood, drywall) in specially designed facilities. • Processing centres for dry recyclables collected from the IC&I sector, owned by the private sector and operated by private sector staff • Processing of IC&I sector recyclables in municipal MRFs • Processing of IC&I sector recyclables by small private sector recyclers • <i>Mandatory processing of all dry wastes prior to landfilling (new policy)</i> • <i>Mandatory processing of all mixed wastes prior to landfilling (new policy)</i> • <i>Additional facilities for processing dry recyclables</i> • <i>Additional facilities for processing mixed wastes</i> 	<ul style="list-style-type: none"> • private sector processing capacity expansions/additions required to handle additional quantities of materials collected • some technical limitations on processing particularly with plastics - low density/light weight; also identification and separation of different plastic types - mixing plastic resins significantly complicates reprocessing • markets may not be able to absorb all materials • subject to stockpiling of particular materials depending on market conditions • possible disposal of a percentage of contaminated recyclables • range of materials collected and processed and method of processing used by private sector will depend on availability of markets 	<ul style="list-style-type: none"> • market development support will be required to accommodate increased quantity, range and quality of materials • include residuals controls on facilities to maximize diversion 	<ul style="list-style-type: none"> • increase in range and quantity of materials processed possible with positive effect on waste diversion if contamination minimized and if end uses/markets can be found

IC&I No Unprocessed Waste To Landfill System, Flexibility, Types and Quantities (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Processing – Wet Wastes</p> <ul style="list-style-type: none"> Centralized windrow composting of source-separated IC&I organics On-site composting of source separated organics generated by the IC&I sector Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector <i>New composting facility (in-vessel) for IC&I organics</i> 	<ul style="list-style-type: none"> amount of source separated wet waste processed will depend on level of (voluntary) source separation by generators – may need increased capacity 	<ul style="list-style-type: none"> promotion/education concerning proper source separation practices 	<ul style="list-style-type: none"> diversion enhanced by source separation of organics – depends on voluntary efforts by generators
<p>IC&I Reuse</p> <ul style="list-style-type: none"> Reuse by IC&I generators, through the Canadian, Provincial and local waste exchange programs Community-based reuse programs and Community Recycling Centres with reuse programs for small IC&I generators Use of food wastes as animal feed Use of food waste for human consumption Landspreading of IC&I organics Use of refillable containers (refillable bottles, refillable pails or drums, etc) Use of re-usable packaging (e.g. reusable plastic and wood pallets, etc.) 	<ul style="list-style-type: none"> as per Existing/Committed System possibly increased range and quantities due to legislation - still depends on willingness of generators to identify and exploit opportunities 	<ul style="list-style-type: none"> as per Existing/Committed System no additional requirements 	<ul style="list-style-type: none"> as per Existing/Committed System possibly increased range and quantities due to legislation - still depends on willingness of generators to identify and exploit opportunities

IC&I No Unprocessed Waste To Landfill System, Flexibility, Types and Quantities (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Reduction <ul style="list-style-type: none"> • voluntary waste reduction actions by small IC&I generators. • Voluntary reduction of packaging waste by the year 2000 (NAPP) - this includes reuse • Mandatory development of waste reduction action plans by designated major IC&I generators (defined in 3Rs regulations). • Mandatory development of packaging reduction action plans by designated major packaging generators (defined in 3Rs regulations). 	<ul style="list-style-type: none"> • as per Existing/Committed System • possibly increased range and quantities due to legislation - still depends on willingness of generators to identify and exploit opportunities 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional requirements 	<ul style="list-style-type: none"> • as per Existing/Committed System • possibly increased range and quantities due to legislation - still depends on willingness of generators to identify and exploit opportunities
IC&I Programs <ul style="list-style-type: none"> • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in small private companies • Mandatory waste audits by designated major IC&I generators (defined in 3Rs regulations) • Mandatory packaging audits by designated major packaging generators (3Rs regulations) • Voluntary packaging reporting by packaging users (NAPP) 	<ul style="list-style-type: none"> • as per Existing/Committed System • possibly increased range and quantities due to legislation - still depends on willingness of generators to identify and exploit opportunities 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional requirements 	<ul style="list-style-type: none"> • as per Existing/Committed System • possibly increased range and quantities due to legislation - still depends on willingness of generators to identify and exploit opportunities

IC&I No Unprocessed Waste To Landfill System, Flexibility, Types and Quantities (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Promotion & Education</p> <ul style="list-style-type: none"> Promotion/education programs focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality Promotion/education of IC&I waste reduction by non-profit organizations Promotion/education of IC&I waste reduction by associations Mandatory posting of waste reduction plans for review by employees of designated major IC&I generators (3Rs regulations) 	<ul style="list-style-type: none"> as per Existing/Committed System possibly increased range and quantities due to legislation - still depends on willingness of generators to identify and exploit opportunities 	<ul style="list-style-type: none"> as per Existing/Committed System additional promotion/education to ensure awareness of and compliance with regulations 	<ul style="list-style-type: none"> as per Existing/Committed System possibly increased range and quantities due to legislation - still depends on willingness of generators to identify and exploit opportunities

TABLE Q-1.6
IC&I NO UNPROCESSED WASTE TO LANDFILL SYSTEM
GTA
SYSTEM NET EFFECTS BY COMPONENT

SYSTEM: IC&I No Unprocessed Waste To Landfill
 CRITERIA GROUP: Service
 CRITERIA: Performance
 INDICATOR: Quantity Diverted or Requiring Landfilling

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Collection – Dry Wastes <ul style="list-style-type: none"> • Voluntary source separation of dry recyclables by small IC&I generators • Mandatory source separation of designated materials by designated major generators (3Rs regulations) • Collection of source separated dry recyclables from the IC&I sector by private sector haulers and recyclers • Curbside collection of IC&I recyclables in some areas by municipal forces • IC&I depots at transfer stations for use by small business generators • Community Recycling Centres for use by small quantity IC&I generators • Landfill bans on specified materials (e.g. wood, tires, drywall, scrap metal, white goods, fine paper etc.) • <i>Mandatory processing of all dry wastes prior to landfilling (new policy required by Ontario, or condition on C of A for landfill)</i> 	<ul style="list-style-type: none"> • prohibiting disposal of unprocessed waste in landfills potentially results in significant diversion from landfill – estimated to divert dry materials representing approximately 55% of IC&I waste, from landfill • success will depend on the extent of contamination of materials, and degree of source separation practiced to meet requirements of policy • success also will depend on the strength of markets for many materials 	<ul style="list-style-type: none"> • continue promotion/education regarding source separation for 3Rs • support development of markets 	<ul style="list-style-type: none"> • prohibiting disposal of unprocessed waste in landfills increases the amount of dry wastes collected and processed. Diversion options will likely be explored for processed wastes, hence policy likely has positive effect on waste diversion – estimated to be 55% of IC&I waste stream

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Collection – Wet Wastes</p> <ul style="list-style-type: none"> • Voluntary source separation of IC&I generated organics • Separate collection of some IC&I wet wastes 	<ul style="list-style-type: none"> • prohibiting disposal of unprocessed waste in landfills, which would be simplified by separation of wet wastes, potentially results in significant diversion from landfill – estimated diversion of wet organics is approximately 6.5% of waste stream • success depends on effective source separation of these wastes to ensure marketability • increased collection capacity for source separated organics likely required 	<ul style="list-style-type: none"> • education/promotion of effective source separation of organics to ensure marketability • active market development to generate adequate end use opportunities for finished compost 	<ul style="list-style-type: none"> • prohibiting disposal of unprocessed waste in landfills, which is simplified if separation of wet wastes practiced, has potential positive effect on waste diversion – estimated to divert 6.5% of IC&I waste stream
<p>IC&I Processing – Dry Wastes</p> <ul style="list-style-type: none"> • Processing of specific dry materials (e.g. C&D wastes, wood, drywall) in specially designed facilities. • Processing centres for dry recyclables collected from the IC&I sector, owned by the private sector and operated by private sector staff • Processing of IC&I sector recyclables in municipal MRFs • Processing of IC&I sector recyclables by small private sector recyclers • <i>Mandatory processing of all dry wastes prior to landfilling (new policy)</i> • <i>Mandatory processing of all mixed wastes prior to landfilling (new policy)</i> • <i>Additional facilities for processing dry recyclables</i> • <i>Additional facilities for processing mixed wastes</i> 	<ul style="list-style-type: none"> • processing of dry wastes under System 6 has a positive affect on diversion of dry recyclables • potential diversion of approximately 55% of waste • diversion depends on markets for products: potentially recoverable materials often sent to landfill when market not strong • diversion at processing stage depends on contamination of dry recyclables potentially greater under System 6 than under previous systems due to mixed collection of at least some wastes • also some limitations in processing mixed plastics and other multi-material items 	<ul style="list-style-type: none"> • continue/extend promotion of source separation • development of markets for dry waste materials 	<ul style="list-style-type: none"> • processing of dry wastes under System 6 has a potentially positive effect on waste diversion– estimated to divert 55% of IC&I waste stream

IC&I No Unprocessed Waste To Landfill System, Performance, Quantities (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
<p>IC&I Processing – Wet Wastes</p> <ul style="list-style-type: none"> Centralized windrow composting of source-separated IC&I organics On-site composting of source separated organics generated by the IC&I sector Vermicomposting at some IC&I locations Rendering of food wastes from IC&I sector <i>New composting facility (in-vessel) for IC&I organics</i> 	<ul style="list-style-type: none"> prohibiting disposal of unprocessed waste in landfills, which is easier if separation of wet wastes occurs, potentially results in significant diversion from landfill – estimated diversion of wet organics is approximately 6.5% of IC&I waste not all IC&I wet wastes are compostable or suitable for other uses due to contaminant materials - success depends on effective source separation of organics required to ensure marketability Contamination of wet organics may be greater under System 6 than under System 5 due to mixed collection Market development required to lower costs and ensure maximum diversion increased processing capacity likely required though existing planned expansion may be sufficient 	<ul style="list-style-type: none"> education/promotion of effective source separation of organics to ensure marketability active market development requires careful management of processing facilities to minimize operational problems 	<ul style="list-style-type: none"> prohibiting disposal of unprocessed waste in landfills, is helped by separation of wet wastes, and has potential positive effect on waste diversion– estimated to divert 6.5% of IC&I waste stream

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Reuse <ul style="list-style-type: none"> • Reuse by IC&I generators, through the Canadian, Provincial and local waste exchange programs • Community-based reuse programs and Community Recycling Centres with reuse programs for small IC&I generators • Use of food wastes as animal feed • Use of food waste for human consumption • Landspreading of IC&I organics • Use of refillable containers (refillable bottles, refillable pails or drums, etc) • Use of re-usable packaging (e.g. reusable plastic and wood pallets, etc.) 	<ul style="list-style-type: none"> • as per Existing/Committed System • Potential for increased quantities – difficult to quantify 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional requirements 	<ul style="list-style-type: none"> • as per Existing/Committed System • Potential for increased quantities – difficult to quantify
IC&I Reduction <ul style="list-style-type: none"> • voluntary waste reduction actions by small IC&I generators. • Voluntary reduction of packaging waste by the year 2000 (NAPP) - this includes reuse • Mandatory development of waste reduction action plans by designated major IC&I generators (defined in 3Rs regulations). • Mandatory development of packaging reduction action plans by designated major packaging generators (defined in 3Rs regulations). 	<ul style="list-style-type: none"> • as per Existing/Committed System • potential for increased quantities – difficult to quantify 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional requirements 	<ul style="list-style-type: none"> • as per Existing/Committed System • Potential for increased quantities – difficult to quantify

IC&I No Unprocessed Waste To Landfill System, Performance, Quantities (cont'd)

Component Category/ Components	Component Effects	Mitigation/ Enhancement	Component Net Effects
IC&I Programs <ul style="list-style-type: none"> • Voluntary waste audits performed by small IC&I generators • Independent voluntary waste reduction programs in small private companies • Mandatory waste audits by designated major IC&I generators (defined in 3Rs regulations) • Mandatory packaging audits by designated major packaging generators (3Rs regulations) • Voluntary packaging reporting by packaging users (NAPP) 	<ul style="list-style-type: none"> • as per Existing/Committed System • potential for increased diversion difficult to quantify 	<ul style="list-style-type: none"> • as per Existing/Committed System • no additional requirements 	<ul style="list-style-type: none"> • as per Existing/Committed System • potential for increased diversion difficult to quantify
IC&I Promotion & Education <ul style="list-style-type: none"> • Promotion/education programs focused on reducing waste disposed by the IC&I sector, carried out by the regional municipality • Promotion/education of IC&I waste reduction by non-profit organizations • Promotion/education of IC&I waste reduction by associations • Mandatory posting of waste reduction plans for review by employees of designated major IC&I generators (3Rs regulations) 	<ul style="list-style-type: none"> • as per Existing/Committed System • potential for increased diversion difficult to quantify 	<ul style="list-style-type: none"> • as per Existing/Committed System • additional promotion/education required to ensure compliance with regulations 	<ul style="list-style-type: none"> • as per Existing/Committed System • potential for increased diversion difficult to quantify

Table Q-2.1
IC&I Existing System
GTA
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: G T A
SYSTEM: IC&I Existing System

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technology	<ul style="list-style-type: none"> • technology for all components are proven • composting facilities have experienced some operational problems 	<ul style="list-style-type: none"> • IC&I Existing System is considered reliable since it is based on proven technology and relies on the integration of several different approaches 	<u>Advantages</u> <ul style="list-style-type: none"> • proven reliability of mix of handling technologies <u>Disadvantage</u> <ul style="list-style-type: none"> • composting facilities have experienced some operational problems (eg. odours at compost) which can be mitigated • relies on voluntary source separation in which not all establishments participate

Table Q-2.1
IC&I Existing System
GTA
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: G T A
 SYSTEM: IC&I Existing System

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accepted	<ul style="list-style-type: none"> Existing System accepts an established range and quantity of recyclable materials that are accommodated in existing facilities Existing System has capability to respond to limited changes range and quantity of materials 	<ul style="list-style-type: none"> Existing IC&I System is considered flexible to handle the most easily recyclable materials 	<u>Advantages</u> <ul style="list-style-type: none"> system can be handle most easily recyclable materials <u>Disadvantages</u> <ul style="list-style-type: none"> flexibility limited by reliance on voluntary source separation, recycling and reduction of wastes limited flexibility to recover more difficult-to-process materials limited diversion of organics also limited by lack or weakness of markets for many materials

Table Q-2.1
IC&I Existing System
GTA
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: GTA
SYSTEM: IC&I Existing System

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> potentially 28% IC&I waste diversion achieved in GTA (based on 1992 figures) 	<ul style="list-style-type: none"> potentially 28% IC&I waste diversion achieved in GTA (based on 1992 figures) 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> potential increase in voluntary participation through promotion/education <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> limited diversion; approximately 72% of IC & I waste continues to be landfilled depends on extensive voluntary participation uncertainty in estimates of current level of participation

Table Q-2.2
IC&I Existing/Committed System
GTA
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: G T A

SYSTEM: IC&I Existing/Committed System

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator: Proven technology	<ul style="list-style-type: none"> • technology for all components are proven • composting facilities have experienced some operational problems • success depends on capture of major generators not already participating in recycling activities 	<ul style="list-style-type: none"> • IC&I Existing/Committed System is considered reliable since it is based on proven technology and relies on the integration of several different approaches 	<u>Advantage</u> <ul style="list-style-type: none"> • proven reliability of mix of handling technologies • some generators currently not involved in recycling will be mandated to source separate waste materials for recycling <u>Disadvantages</u> <ul style="list-style-type: none"> • composting facilities have experienced some operational problems (eg. odours) which can be mitigated • may not capture sufficient number of major generators • regulations only cover largest generators; relies on significant voluntary source separation in which not all establishments participate • depends on effective monitoring and follow-up

Table Q-2.2
IC&I Existing/Committed System
GTA
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: G T A

SYSTEM: IC&I Existing/Committed System

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accepted	<ul style="list-style-type: none"> existing/committed system accepts a range of recyclable materials similar to the existing system as defined in the 3Rs regulations increase in the quantity of materials depending on the capture of IC&I establishments by the regulations it is expected that the increase in materials handled can be accommodated in existing facilities existing/committed system has capability to respond to limited changes in range and quantity of materials 	<ul style="list-style-type: none"> existing/committed IC&I System is considered flexible to handle the most easily recyclable materials 	<u>Advantages</u> <ul style="list-style-type: none"> system can be handle most easily recyclable materials mandatory source separation potentially will increase participation in recycling activities by major waste generators <u>Disadvantages</u> <ul style="list-style-type: none"> limited flexibility to recover more difficult-to-process materials limited diversion of organics possible limited capture by regulations of major waste generators could limit quantity of materials handled

Table Q-2.2
IC&I Existing/Committed System
GTA
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: G T A

SYSTEM: IC&I Existing/Committed System

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> potentially 30%-34% IC&I waste diversion achieved in GTA (based on 1992 figures) 	<ul style="list-style-type: none"> potentially 30%-34% IC&I waste diversion achieved in GTA (based on 1992 figures) 	<u>Advantage</u> <ul style="list-style-type: none"> level of voluntary participation may be improved through promotion/education <u>Disadvantages</u> <ul style="list-style-type: none"> limited diversion potential; from 66% to 70% of IC & I waste continues to be landfilled uncertainty exists in the current levels of voluntary participation uncertainty in the number of establishments subject to the regulations - refinement of the estimates possible

Table Q-2.3
IC&I Extended 3Rs Regulations System
GTA
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: G T A

SYSTEM: IC&I Extended 3Rs System

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator:			
Proven technology	<ul style="list-style-type: none"> • technology for all components are proven • some technical limitations on handling some materials such as, C&D wastes and some plastics - high volume, low density, difficult separation • composting facilities have experienced some operational problems (eg odours) • mandatory source separation regulations designed to capture 90% of range of wastes not yet demonstrated • success depends on effective design of regulations to capture establishments which generate 90% of waste 	<ul style="list-style-type: none"> • IC&I Extended 3Rs System is considered reliable • it is based on proven technology for separating most materials with technical limitations for some materials such as C&D wastes and some plastics • regulations designed to ensure source separation of 90% of various materials not yet demonstrated 	<p><u>Advantage</u></p> <ul style="list-style-type: none"> • proven reliability of mix of handling technologies for most easily-recycled materials <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • composting facilities have experienced some operational problems (eg. odours) which can be mitigated • some technical limitations for some materials such as C&D wastes and some plastics • regulations designed to ensure source separation of 90% of various materials not yet demonstrated • success likely depends on effective monitoring and follow-up

Table Q-2.3
IC&I Extended 3Rs Regulations System
GTA
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: G T A

SYSTEM: IC&I Extended 3Rs System

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accepted	<ul style="list-style-type: none"> increases the quantity of materials handled by extending the number of establishments captured by the regulations it is expected that the increase in materials handled would require and expansion of private and public sector collection and processing capacity limitations on identification and separation of materials such as plastics 	<ul style="list-style-type: none"> Extended 3Rs System is considered flexible as it is designed to extend the range and quantity of materials separated by including all sectors and a larger number of establishments expansion of handling capacity is likely required technical limitations and market limitations become more significant and limit the extent to which the system can reliably handle the range and quantity of materials 	<u>Advantages</u> <ul style="list-style-type: none"> system can be handle most easily recyclable materials extension of mandatory source separation to greater number of establishments potentially will increase participation in recycling activities and increase the quantity of all materials handled <u>Disadvantages</u> <ul style="list-style-type: none"> more difficult-to-process materials included in regulations bring technical and market limitations - eg. greater amount of plastics limited diversion of organics

Table Q-2.3
IC&I Extended 3Rs Regulations System
GTA
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: G T A

SYSTEM: IC&I Extended 3Rs System

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> potentially 46% IC&I waste diversion achieved in GTA (based on 1992 figures) 	<ul style="list-style-type: none"> potentially 46% IC&I waste diversion achieved in GTA (based on 1992 figures) 	<u>Advantages</u> <ul style="list-style-type: none"> significant increase in estimated potential diversion of waste from landfill - 46% most generators covered by regulations <u>Disadvantages</u> <ul style="list-style-type: none"> approximately 54% of IC&I waste continues to be landfilled success depends on effective design of regulations

Table Q-2.4
IC&I Expanded 3Rs Regulations System
GTA
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: G T A

SYSTEM: IC&I Expanded 3Rs System

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator:			
Proven technology	<ul style="list-style-type: none"> • technology for all components are proven • technology can handle collection/separation mixed papers but some technical limitations on reprocessing boxboard and thus, weak market • some technical limitations on handling some materials such as, C&D wastes and some plastics - high volume, low density, difficult separation • composting facilities have experienced some operational problems • mandatory source separation regulations designed to capture 90% of range of wastes not yet demonstrated • success depends on effective design of regulations to capture establishments which generate 90% of waste 	<ul style="list-style-type: none"> • IC&I Expanded 3Rs System is considered reliable • it is based on proven technology for separating most materials with technical limitations for some materials such as C&D wastes and some plastics and boxboard • regulations designed to ensure source separation of 90% of various materials not yet demonstrated 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • proven reliability of mix of handling technologies for most easily-recycled materials <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • composting facilities have experienced some operational problems (eg. odours) which can be mitigated • some technical limitations for some materials such as C&D wastes and some plastics and fibres such as boxboard • regulations designed to ensure source separation of 90% of various materials not yet demonstrated • success likely depends on effective monitoring and follow-up

Table Q-2.4
IC&I Expanded 3Rs Regulations System
GTA
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: G T A

SYSTEM: IC&I Expanded 3Rs System

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility Indicator: Types and range of quantities of waste accepted	<ul style="list-style-type: none"> • system 4 expands the range of materials required to be source separated by certain sectors - extends long list in proposed 3Rs regs to all sectors and adds mixed paper to the list • increases the quantity of materials handled by extending the number of establishments captured by the regulations • it is expected that the increase in materials handled would require and expansion of private and public sector collection and processing capacity beyond that required for system 2 • limitations on identification and separation of materials such as plastics 	<ul style="list-style-type: none"> • Expanded 3Rs System is considered more flexible as it is designed to expand the range and quantity of materials separated from all sectors • expansion of handling capacity is likely required • technical limitations and market limitations for some materials become more significant and limit the extent to which the system can reliably handle the range and quantity of materials 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • system can be handle most easily recyclable materials • extension of mandatory source separation to greater number of establishments potentially will increase participation in recycling activities and increase the quantity of all materials handled • all sectors mandated to separate a greater range of materials <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • more difficult-to-process materials included in regulations bring technical and market limitations - greater amount of plastics and fibres such as boxboard • limited diversion of organics

Table Q-2.4
IC&I Expanded 3Rs Regulations System
GTA
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: G T A
 SYSTEM: IC&I Expanded 3Rs System

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> potentially 54% IC&I waste diversion achieved in GTA (based on 1992 figures) 	<ul style="list-style-type: none"> potentially 54% IC&I waste diversion achieved in GTA (based on 1992 figures) 	<u>Advantages</u> <ul style="list-style-type: none"> significant increase in estimated potential diversion of waste from landfill - 54% potentially captures virtually entire range of materials for recycling <u>Disadvantages</u> <ul style="list-style-type: none"> success depends on effective design of regulations and effective monitoring and follow-up limited diversion of organics

TABLE Q-2.5
IC&I Expanded 3Rs Regulations with Organics System
GTA
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: G T A

SYSTEM: IC&I Expanded 3Rs with Organics System

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator:			
Proven technology	<ul style="list-style-type: none"> • technology for all components are proven as per System 4 • collection and storage of wet wastes may be a problem for many establishments • effective source separation of wet wastes particularly food is required to ensure product quality and marketability and thus, diversion • composting facilities have experienced some operational problems e.g. odour and product quality - these can be mitigated • regulations designed to capture 90% of wet organics for diversion are not yet demonstrated • organics processing capacity such as composting will have to increase to handle source separated food and yard wastes 	<ul style="list-style-type: none"> • IC&I Expanded 3Rs System with Organics is considered reliable though less than system 3 and 4 • regulations designed to ensure source separation of 90% of food and yard waste as well as other materials not yet demonstrated • many small organic waste generators may find collection and storage difficult 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • proven reliability of mix of handling technologies for most easily-recycled materials • proven technology for processing wet organics to achieve mass and volume reduction and diversion when markets available <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • composting facilities have experienced some operational problems (eg. odours) which can be mitigated • potential problems of collection and storage for some generators of wet organic wastes particularly smaller generators of food wastes • effective source separation essential for marketability of product • depends on effective monitoring and follow-up

TABLE Q-2.5
IC&I Expanded 3Rs Regulations with Organics System
GTA
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: G T A
 SYSTEM: IC&I Expanded 3Rs with Organics System

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accepted	<ul style="list-style-type: none"> as per System 4 but System 5 extends mandatory separation of wet organics - food and yard wastes to the major generators of food and yard waste to capture 90% of these wastes it is expected that an increase in wet organics processing capacity e.g. composting would be required 	<ul style="list-style-type: none"> System 5 is considered more flexible as it is designed to capture 90% of the food and yard waste in the IC&I sector and to process it in a variety of ways an expansion of handling and processing capacity is likely required 	<u>Advantages</u> <ul style="list-style-type: none"> System 5 includes food and yard waste, a significant fraction of the IC&I waste stream (roughly 7.5%) for source separation potentially increasing diversion <u>Disadvantages</u> <ul style="list-style-type: none"> effective source separation of wet organics essential to ensure product quality and marketability

TABLE Q-2.5
IC&I Expanded 3Rs Regulations with Organics System
GTA
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: G T A
 SYSTEM: IC&I Expanded 3Rs with Organics System

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator: Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> • potentially 60% IC&I waste diversion achieved in GTA (based on 1992 figures) • diversion greatly enhanced by effective source separation to meet market quality specifications 	<ul style="list-style-type: none"> • potentially 60% IC&I waste diversion achieved in GTA (based on 1992 figures) • diversion greatly enhanced by effective source separation to meet market quality specifications 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • significantly increases estimated potential diversion of waste from landfill - 60% • includes food and yard waste which account for a significant portion of the waste stream • both mass/volume reduction (composting) possible as well as possible diversion of organic wastes <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • likely present difficulties for many small establishments • success depends on effective design of regulations and effective monitoring and follow-up

Table Q-2.6
IC&I No Unprocessed Waste to Landfill
GTA
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: G T A

SYSTEM: IC&I No Unprocessed Waste to Landfill System

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Reliability			
Indicator:			
Proven technology	<ul style="list-style-type: none"> • technology for most components are proven • programs ranging from extensive source separation to a two-bin wet and dry mixed waste processing likely response • flow controls are very controversial and there is significant resistance to their implementation • success would depend on effective methods for encouraging compliance • effective source separation of wet wastes is required to reduce contamination to ensure marketability of recoverables • contamination may be greater in mixed waste streams • composting facilities have experienced some operational problems - these can be mitigated • processing of mixed waste streams often relies on sophisticated equipment - expensive and subject to breakdown • technical limitations on separation of some materials from mixed waste streams particularly plastics • source separation can enhance processing but identification and separation problems persist in mixed plastics streams • possible disposal of a percentage of contaminated recyclables 	<ul style="list-style-type: none"> • System 6 is considered reliable though less than other systems • significant resistance to implementation of flow controls would be expected • success depends on effectiveness of flow controls • range of programs including source separation and mixed waste handling likely response - uncertainty in likely response • technical limitations on handling some materials • possible disposal of a percentage of contaminated recyclables, stockpiling of particular materials depending on market conditions 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> • proven reliability of mix of handling technologies for most easily-recycled materials • technology exists in GTA to handle mixed waste streams offering increased options for handling wastes • proven technology for processing wet organics to achieve mass and volume reduction and diversion when markets available <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> • waste flow controls may be difficult to enforce • experience has demonstrated some operational problems in processing (eg. odours at compost facilities) which can be mitigated • potential problems of collection and storage for some generators of wet organic wastes • possible increased contamination of materials in mixed waste handling option • focussing on "processing" of waste rather than explicitly requiring source separation of specific materials potentially reduces emphasis on need for market development

Table Q-2.6
IC&I No Unprocessed Waste to Landfill
GTA
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY:

G T A

SYSTEM:

IC&I No Unprocessed Waste to Landfill System

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Flexibility			
Indicator: Types and range of quantities of waste accepted	<ul style="list-style-type: none"> increased coverage of waste generators potentially increases quantity and range of materials available for recovery technical limitations on recovery of certain materials subject to stockpiling of particular materials depending on market conditions range of materials collected and processed by private sector will depend on availability of markets - markets for some material not well-developed (e.g. boxboard, many plastics and glass) increased dry waste processing capacity likely required organics processing capacity such as composting will have to increase to handle source separated food and yard wastes 	<ul style="list-style-type: none"> System 6 is considered more flexible as it is designed to capture wastes from all IC&I waste generators range of materials collected, processed and recovered by private sector will depend on availability of markets - markets for some material not well-developed (e.g. boxboard, many plastics and glass) an expansion of handling and processing capacity is likely required 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> System 6 increases number of establishments required to participate in 3Rs potentially making available greater quantity and range of materials for recovery <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> option of mixed waste handling may reduce effective separation and recovery

Table Q-2.6
IC&I No Unprocessed Waste to Landfill
GTA
SYSTEM NET EFFECTS BY CRITERION

REGIONAL MUNICIPALITY: G T A

SYSTEM: IC&I No Unprocessed Waste to Landfill System

Criteria/Indicator	System Net Effects by Indicator	System Net Effects by Criterion	Advantages/Disadvantages by Criterion
Criterion: Performance			
Indicator:			
Quantity diverted or requiring landfilling	<ul style="list-style-type: none"> potentially 62% IC&I waste diversion achieved in GTA (based on 1992 figures) 	<ul style="list-style-type: none"> potentially 62% IC&I waste diversion achieved in GTA (based on 1992 figures) 	<p><u>Advantages</u></p> <ul style="list-style-type: none"> significant increase in estimated potential diversion of waste from landfill - 62% captures widest range and quantity of material for possible recycling range of options likely available for individual establishments to deal with wastes <p><u>Disadvantages</u></p> <ul style="list-style-type: none"> significant resistance to implementation of flow controls likely - success depends on effective methods to encourage compliance focussing on "processing" of waste rather than explicitly requiring source separation of specific materials potentially reduces emphasis on need for market development



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3Rs analysis - arza

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